Full-load del. with charge press.: BOSCH-INJ.-PUMP TEST SPECIFICATIONS 1/min: 1500 Note inst. in remarks column Speed Charge press. hPa: 800 : PER 5.0 C Test sheet Del.quantity cm3/ : 16.07.87 1000H.: 66,1...67,1 Edition cm3/:4.0replaces Dispersion 1000H : (4,5) Calibrating oil : ISO 4113 : VE 4/11F2250 R274 Full-load del. w/out charge press.: Injection pump : 0 460 414 045 Type number 1/min : 500 Speed Customer-specific information Deliquantity cm3/ Customer : PERKINS 1000H.: 17,8...18,8 Engine : TC MARINE Low-idle speed regulation: TEST BENCH REQUIREMENTS Speed 1/min: 400 Speed Del.quantity cm3/
1000H.: 10,0...12,0
Dispersion cm3/: 3,0 Calibrating-oil oc return temp. with thermometer : 40...48 1000H.: (4.0) : 42...50 electronically Full-load speed regulation: Inlet press., bar: 0,35 1/min: 2500 Speed Charge press. hPa: 800 Del.quantity cm3/ 1000H: 23,5...25,5 Calibrating nozzle-holder : 1 688 901 022 assembly Opening Start: bar : 130...133 pressure Speed 1/min: 100 Del.quantity : 62,0...98,0 Test inj. tubing : 1 680 750 073 cm3/1000H.: mind Outside diameter : 6 Inspection-pump test specifications x Wall thickness : 2 Test specifications in parentheses mm : 450 x Length Timing-device characteristic: Start of delivery 1/min: 1000 Indicator setting: 1st speed hPa: 800 Piston stroke mm: 1.28 Charge press. Outlet : A TD travel mm: 0,9...1,7 mm: (0,6...2,0)KSB solenoid-operated Injection-pump setting values volt: -Test specifications in parentheses valve 2nd speed 1/min: 1500 Charge press. hPa: 800 Timing-device travel: TD travel mm: mm: (3,4...4,8)1/min: 1500 Speed Charge press. hPa: 800 KSB solenoid-operated Setting value mm: 3,9...4,3 valve volt: -3rd speed 1/min: 1800 Charge press. hPa: 800 Supply-pump pressure: mm: 4,9...5,7 TD travel mm: (4,6...6,0)1/min: 1500 Speed Charge press. hPa: 800 Setting value bar: 7,1...7,7 KSB solenoid-operated valve volt: -

A01

4th speed 1/min: 500	
	Del.quantity cm3/: 58.364.3
Chance anace ADA: MOD	Del.quantity cm3/: 58,364,3 1000H.: (57,964,7)
Charge press. hPa: 800	744 1 442- 500
TD travel mm: 1,03,0	7th speed 1/min: 500
mm; -	Charge press. hPa: - Del.quantity cm3/: - 1000H.: (15,720,9)
KSB solenoid-operated	Del.quantity cm3/: -
	10004 (15 7 20 0)
valve volt: 12.0	1000n.: (13,720,77
5th speed 1/min: 1000	
Charge press. hPa: 800	Zero delivery (stop):
TD travel mm: 3,35,3	
	Mach chutaff.
mm: -	Mech. shutoff:
KSB solenoid-operated	Speed 1/min: 2250
valve volt: 12,0	Del.quantity cm3/: -
	1000H.: -
Cupaluantes apaccupa abanatasistis:	10001111
Supply-pump pressure characteristic:	• 11 · 1 · 1 · 1 · · · · ·
	Idle delivery:
1st speed 1/min: 1000	· · · · · · · · · · · · · · · · · · ·
Charge press. hPa: 800	Mfg. date: until :-
	101 cood 1/min /00
Supp (y-pump	1st speed 1/min: 400
pressure bar: 6,16,7	Del.quantity cm3/: - 1000H.: (6,515,5)
2nd speed 1/min: 1800	1000H.: (6,515,5)
Charge press. hPa: 800	2nd speed 1/min: 500
Cura Lu-auma	Del eventitu en7/1 2 0 9 0
Supply-pump !	Del.quantity cm3/: 2,08,0
pressure bar: 7,78,3	1000H.: (0,09,5)
Overflow quantity at overflow value.	Automatic starting fuel delivery:
Overflow quantity at overflow valve:	Automatic starting fuel delivery:
1st speed 1/min: 500	1st speed 1/min: 350
Charge press. hPa: 800	Del.quantity cm3/: -
Ovef(ow : 4183	ind. 1000H: 30,0
VVE1.UW ; 4105	ind. 1000H: 30,0
quantity cm3/10s: (2698)	
2nd speed 1/min: 2250	Shutoff electromagnet:
Charge press. hPa: 800	on a contract of the contract
Overflow : 55138	Cub-in
OVERTION : 33130	Cut-in
quantity cm3/10s: (40153)	min. voltage : 10,0
	min. voltage : 10,0 Rated voltage : 12,0
quantity cm3/10s: (40153)	Rated voltage : 10,0
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:	Rated voltage : 12,0
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed  1/min: 500	Rated voltage : 10,0  Mounting and assembly dimensions:
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed  1/min: 500	Rated voltage : 12,0
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed  1/min: 500	Rated voltage : 12,0  Mounting and assembly dimensions:
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed  1/min: 500  Charge-air pressure-setting  1 point  hPa: 300	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation K mm : 3,23,4
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation K mm : 3,23,4 KF mm : K-0T
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-0T  MS mm : 0,70,95
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-0T  MS mm : 0,70,95
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-0T  MS mm : 0,70,95
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800  Del.quantity cm3/: 0,06,0	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-0T  MS mm : 0,70,95  SVS max. mm : 3,0
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char::  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800  Del.quantity cm3/: 0,06,0	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-0T  MS mm : 0,70,95
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800  Del.quantity cm3/: 0,06,0	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-0T  MS mm : 0,70,95  SVS max. mm : 3,0
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5 1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800 Del.quantity cm3/: 0,06,0  1000H.: - 3rd speed 1/min: 2500	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-0T  MS mm : 0,70,95  SVS max. mm : 3,0
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800  Del.quantity cm3/: 0,06,0  1000H.: -  3rd speed 1/min: 2500  Charge press. hPa: 800	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-0T  MS mm : 0,70,95  SVS max. mm : 3,0  Remarks:
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char::  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800  Del.quantity cm3/: 0,06,0  1000H.: -  3rd speed 1/min: 2500  Charge press. hPa: 800  Del.quantity cm3/: -	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-0T  MS mm : 0,70,95  SVS max. mm : 3,0
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800  Del.quantity cm3/: 0,06,0  1000H.: -  3rd speed 1/min: 2500  Charge press. hPa: 800  Del.quantity cm3/: -  1000H.: (20,029,0)	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-0T  MS mm : 0,70,95  SVS max. mm : 3,0  Remarks:
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800  Del.quantity cm3/: 0,06,0  1000H.: -  3rd speed 1/min: 2500  Charge press. hPa: 800  Del.quantity cm3/: -  1000H.: (20,029,0)  4th speed 1/min: 2250	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-0T  MS mm : 0,70,95  SVS max. mm : 3,0  Remarks:
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800  Del.quantity cm3/: 0,06,0  1000H.: -  3rd speed 1/min: 2500  Charge press. hPa: 800  Del.quantity cm3/: -  1000H.: (20,029,0)  4th speed 1/min: 2250	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-0T  MS mm : 0,70,95  SVS max. mm : 3,0  Remarks:
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800  Del.quantity cm3/: 0,06,0  1000H.: -  3rd speed 1/min: 2500  Charge press. hPa: 800  Del.quantity cm3/: -  1000H.: (20,029,0)  4th speed 1/min: 2250  Charge press. hPa: 800	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-0T  MS mm : 0,70,95  SVS max. mm : 3,0  Remarks:
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800  Del.quantity cm3/: 0,06,0  1000H.: -  3rd speed 1/min: 2500  Charge press. hPa: 800  Del.quantity cm3/: -  1000H.: (20,029,0)  4th speed 1/min: 2250  Charge press. hPa: 800  Del.quantity cm3/: 68,572,5	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-OT  MS mm : 0,70,95  SVS max. mm : 3,0  Remarks:  Correction at adjusting nut (46)
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800  Del.quantity cm3/: 0,06,0  1000H.: -  3rd speed 1/min: 2500  Charge press. hPa: 800  Del.quantity cm3/: -  1000H.: (20,029,0)  4th speed 1/min: 2250  Charge press. hPa: 800  Del.quantity cm3/: 68,572,5  1000H.: (67,973,1)	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-0T  MS mm : 0,70,95  SVS max. mm : 3,0  Remarks:
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800  Del.quantity cm3/: 0,06,0  1000H.: -  3rd speed 1/min: 2500  Charge press. hPa: 800  Del.quantity cm3/: -  1000H.: (20,029,0)  4th speed 1/min: 2250  Charge press. hPa: 800  Del.quantity cm3/: 68,572,5  1000H.: (67,973,1)	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-OT  MS mm : 0,70,95  SVS max. mm : 3,0  Remarks:  Correction at adjusting nut (46)
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5  1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800  Del.quantity cm3/: 0,06,0  1000H.: -  3rd speed 1/min: 2500  Charge press. hPa: 800  Del.quantity cm3/: -  1000H.: (20,029,0)  4th speed 1/min: 2250  Charge press. hPa: 800  Del.quantity cm3/: 68,572,5  1000H.: (67,973,1)  5th speed 1/min: 1500	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-OT  MS mm : 0,70,95  SVS max. mm : 3,0  Remarks:  Correction at adjusting nut (46)
quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.:  1st speed 1/min: 500  Charge-air pressure-setting point hPa: 300  Del.quantity cm3/: 32,533,5 1000H.: (29,636,4)  2nd speed 1/min: 2600  Charge press. hPa: 800  Del.quantity cm3/: 0,06,0 1000H.: -  3rd speed 1/min: 2500  Charge press. hPa: 800  Del.quantity cm3/: - 1000H.: (20,029,0)  4th speed 1/min: 2250  Charge press. hPa: 800  Del.quantity cm3/: 68,572,5 1000H.: (67,973,1)  5th speed 1/min: 1500  Charge press. hPa: 800	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-OT  MS mm : 0,70,95  SVS max. mm : 3,0  Remarks:  Correction at adjusting nut (46)
<pre>quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.: 1st speed   1/min: 500 Charge-air pressure-setting    point</pre>	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-OT  MS mm : 0,70,95  SVS max. mm : 3,0  Remarks:  Correction at adjusting nut (46)
<pre>quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.: 1st speed  1/min: 500 Charge-air pressure-setting point</pre>	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-OT  MS mm : 0,70,95  SVS max. mm : 3,0  Remarks:  Correction at adjusting nut (46)
<pre>quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.: 1st speed  1/min: 500 Charge-air pressure-setting point</pre>	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-OT  MS mm : 0,70,95  SVS max. mm : 3,0  Remarks:  Correction at adjusting nut (46)
<pre>quantity cm3/10s: (40153)  Delivery-quant. and breakaway char.: 1st speed   1/min: 500 Charge-air pressure-setting    point</pre>	Rated voltage : 12,0  Mounting and assembly dimensions:  Designation  K mm : 3,23,4  KF mm : K-OT  MS mm : 0,70,95  SVS max. mm : 3,0  Remarks:  Correction at adjusting nut (46)

Del.quantity cm3/ 1000H.: 81,5...82,5 Dispersion cm3/: 3,5 BOSCH-INJ.-PUMP TEST SPECIFICATIONS 1000H.: (4,0) Note inst. in remarks column Low-idle speed regulation: : CAS 4,4 A Test sheet : 17.07.87 Edition replaces 1/min: 350 Speed Del.quantity cm3/ 1000H.: 16,5...20,5 Dispersion cm3/: 3,0 1000H.: (3,5) : ISO 4113 Calibrating oil : VE 4/11F1200 R277 Injection pump : 0 460 414 047 Type number Full-load speed regulation: Customer-specific information Customer : CASE 1/min: 1260 Speed Del.quantity cm3/ 1000H: 54,0...60,0 Engine : D 268/885 TEST BENCH REQUIREMENTS Start: Calibrating-oil C 1/min: 100 Speed return temp. Del.quantity mind cm3/1000H.: 85.0 with thermometer : 40...48 : 42...50 electronically Inspection-pump test specifications Inlet press., bar: 0,35 Test specifications in parentheses Calibrating nozzle-holder : 1 688 901 020 assembly Timing-device characteristic: Opening 1/min: 500 1st speed TD travel mm: 2,6...3,4 mm: (2,3...3,7) bar: 172...175 pressure 1/min: 800 Perforated-plate 2nd speed TD travel diameter mm : 0.6 mm: mm: (4,6...6,0) 1/min: 1150 mm: 7,4...8,2 mm: (7,1...8,5) 3rd speed Test inj. tubing : 1 680 750 017 TD travel Outside diameter : 6 x Wall thickness : 2 Supply-pump pressure characteristic: mm : 840 x Length 1/min: 500 1st speed Injection-pump setting values Supply-pump bar: 2,6...3,2 1/min: 1150 pressure Test specifications in parentheses 2nd speed Timing-device travel: Supply-pump bar: 5,0...5,6 pressure 1/min: 800 Speed Overflow quantity at overflow valve: Setting value mm: 5,1...5,6 1/min: 500 Supply-pump pressure: 1st speed Oveflow : 41...83 quantity cm3/10s: (26...98) 2nd speed 1/min: 1150 1/min: 800 Speed 2nd speed Setting value bar: 3,7...4,3 Overflow : 55...138 quantity cm3/10s: (40...153) Full-load del. w/out charge press.: Delivery-quant. and breakaway char.: 1/min : 800 Speed 1st speed 1/min: 1400 A03

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Del.quantity cm3/: 0,0...3,0
1000H.: -
                 1/min: 1370
Znd speed
Del.quantity cm3/: U
1000H.: -
                  cm3/: 0,0...10,0
                 1/min: 1320
3rd speed
Del.quantity cmaz: 1
                  cm3/: 10,0...40,0
                 1/min: 1260
4th speed
Del.quantity cm3/: -
1000H.: (52,5...61,5)
5th speed 1/min: 1150
Del.quantity cm3/: 84,0...87,0
1000H.: (82,5...88,5)
                 1/min: 800
6th speed
Del.quantity cm3/: -
1000H.: (79,5...84,5)
7th speed 1/min: 500
Del.quantity cm3/: 75,5...79,5
1000H.: (74,0...81,0)
Zero delivery (stop):
Mech. shutoff:
                 1/min: 1150
Speed
Del.quantity cm3/: 0..3
1000H.: -
Idle delivery:
Mfg. date: until
                1/min: 350
1st speed
Del.quantity cm3/: -
1000H.: (14,0..23,0)
                1/min: 450
2nd speed
Del.quantity cm3/: 0,0...4,0
1000H.: -
Automatic starting fuel delivery:
1st speed
                 1/min: 350
Del.quantity cm3/: -
                 1000H: 80,0
 ind.
                 1/min: 450
2nd speed
Deliquantity cm3/:
                 1000H: 80,0
 ax.
Shutoff electromagnet:
Cut-in
 min. voltage
Rated voltage
Mounting and assembly dimensions:
Designation
                       : 3,2...3,4
: 5,4...5,7
: 1,2..1,45
KF
MS
A04
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SVS max. mm : 1,6 Remarks:

Note inst. in remarks column

Test sheet : CAS 4,4 B : 17.07.87 Edition replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/11F1150 R277-1 Type number : 0 460 414 048

Type number

Customer-specific information Customer : CASE

: D 268/844S Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 020 assembly

Opening

bar: 172...175 pressure

Perforated-plate

diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 800 Speed

Setting value mm: 3,3...3,7

Supply-pump pressure:

1/min: 800 Speed

Setting value bar: 4,2...4,8

Full-load del. w/out charge press.:

1/min : 800 Speed

Del.quantity cm3/ ! 1000H.: 80.781.7	Del.quantity cm3/: 0,03,0 1000H.: -
1000H.: 80.781.7 Dispersion cm3/: 3.5	2nd speed 1/min: 1270 Del.quantity cm3/: 0,010,0 1000H.: -
Low-idle speed regulation:	3rd speed 1/min: 1220 Del.quantity cm3/: 10,040,0
Speed 1/min: 350 Del.quantity cm3/ 1000H.: 16,520,5	1000H.: - 4th speed 1/min: 1190
Dispersion cm3/: 3,5	Del.quantity cm3/: - 1000H.: (50,559,5) 5th speed 1/min: 1000
Full-load speed regulation:	Del. juantity cm3/: 82,285,2) 1000H.: (80,786,7)
Speed 1/min: 1190   Del.quantity cm3/   1000H: 52,058,0	6th speed 1/min: 800 Del.quantity cm3/: - 1000H.: (78,783,7)
Start:	7th speed 1/min: 500 Del.quantity cm3/: 76,780,7 1000H.: (75,282,2)
Speed 1/min: 100 ! Del.quantity : - ! mind cm3/1000H.: 85,0 !	Zero delivery (stop):
Inspection-pump test specifications Test specifications in parentheses	Mech. shutoff: Speed 1/min: 1150 Del.quantity cm3/: 03 1000H.: -
Timing-device characteristic:	Idle delivery:
1st speed 1/min: 500  TD travel nm: 0,81,6  mm: (0,51,9)  2nd speed 1/min: 800  TD travel mm: -  mm: (2,84,2)	Mfg. date: until : - 1st speed   1/min: 350 Del.quantity cm3/: -
3rd speed 1/min: 1100   TD travel   mm: 5,26,0   mm: (4,96,3)	1000H.: - Automatic starting fuel delivery:
Supply-pump pressure characteristic:	1st speed 1/min: 350 Del.quantity cm3/: -
1st speed 1/min: 500   Supply-pump	ind. 1000H: 80,0
pressure bar: 3.13,7   2nd speed 1/min: 1100   Supply-pump	2nd speed 1/min: 450 Del.quantity cm3/: - ax. 1000H: 80,0
pressure bar: 5,26,0	Shutoff electromagnet:
Overflow quantity at overflow valve:	Cut-in
1st speed 1/min: 500	min. voltage : - Rated voltage : -
quantity cm3/10s: (2698)   2nd speed	Mounting and assembly dimensions:
quantity cm3/10s: (40153)	Designation K mm : 3,23,4
Delivery-quant. and breakaway char.: I 1st speed 1/min: 1300	KF mm : 5,45.7 MS mm : 1,21,45

SVS max. mm : 3,8

Note inst. in remarks column

Test sheet : MAN 5.6 P5 Edition : 20.07.87 replaces : -

Calibrating oil : ISO 4113

Injection pump : VE 6/11F1500 R55-9 Type number : 0 460 416 056

Customer-specific information

Customer

Engine : DO 226 MF

Power k: 100 Speed 1/mi: 3000

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,6

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000 Setting value mm: 6,0...6,4

Supply-pump pressure:

Speed 1/min: 1000 Setting value bar: 5,7...6,3

```
Full-load del. W/out charge press.:
                                                      Delivery-quant. and breakaway char.:
             1/min : 1000
                                                                   1/min: 1620
Speed
                                                      1st speed
                                                      Del.quantity cm3/: 16.0...24.0
1000H.: (15.5...24.5)
Deliquantity cm3/
             1000H.: 63.5...64.5
cm3/: 3.5
Dispersion
                                                      2nd speed
                                                                    1/min: 1550
             1000H.: (4,0)
                                                      Del.quantity
                                                                    cm3/: -
                                                                   1000H.: (50,5...59,5)
Low-idle speed regulation:
                                                                    1/min: 1500
                                                      3rd speed
                                                      Del.quantity cm3/: 69.8...72.2
1000H.: (68.4...73,6)
Speed
              1/min: 350
Del.quantity
                                                                    1/min: 1000
              cm3/
                                                      4th speed
                                                      Del.quantity cm5/: -
1000H.: (61,4...66,6)
             1000H.: 7,0...11,0
cm3/: 3,0
Dispersion
             1000H.: (4,0)
                                                                    1/min: 600
                                                      5th speed
Full-load speed regulation:
                                                      Del.quantity cm3/: 45,8...49,2
                                                                   1000H.: (44,1...50,9)
Speed
              1/min: 1550
Del.quantity
               cm3/
                                                      Zero delivery (stop):
              1000H: 52,0...58,0
                                                      Mech. shutoff:
Start:
                                                      Speed
                                                                    1/min: 1500
                                                      Del.quantity cm3/: - 1000H.: -
Speed
              1/min: 100
Del quantity
mind
         cm3/1000H.: 50.0
                                                      Idle delivery:
Inspection-pump test specifications
                                                      Mfg. date: until : -
                                                      1st speed
Test specifications in parentheses
                                                                    1/min: 350
                                                      Del.quantity cm3/: -
                                                                   1000H.: (4,5...13,5)
1/min: 450
Timing-device characteristic:
                                                      2nd speed
                                                      Del.quantity cm3/: 0,0...2,0
              1/min: 600
                                                                   1000H .: -
1st speed
                 mm: 3,3...4,1
mm: (3,0...4,4)
TD travel
                                                      Automatic starting fuel delivery:
2nd speed
              1/min: 1000
TD travel
                 mm:
                                                      1st speed
                                                                    1/min: 370
                      (5,5...6,9)
                  mm:
                                                      Del.quantity
                                                                    cm3/: -
3rd speed
                      1400
               1/min:
                                                                    1000H: 55,0
                                                       ind.
ID travel
                  mm: 8,6...9,4
                  mm: (8,3...9,7)
                                                                    1/min: 500
                                                      2nd speed
                                                      Del.quantity cm3/: -
                                                                    1000H: 55,0
Supply-pump pressure characteristic:
                                                       ax.
              1/min: 600
1st speed
                                                      Shutoff electromagnet:
Supply-pump
                bar: 4,2...4,8
 pressure
                                                      Cut-in
              1/min: 1500
2nd speed
                                                                          : 20,0
                                                       min. voltage
Supply-pump
                                                                          : 24,0
                                                      Rated voltage
                bar: 7,5...8,1
 pressure
                                                      Mounting and assembly dimensions:
Overflow quantity at overflow valve:
                                                      Designation
              1/min: 500
1st speed
                                                                     mm
                                                      KF
Oveflow
                    : 41...83
                                                                     mm
                                                                          : 5,7...6,0
            cm3/10s: (26...98)
1/min: 1500
 quantity
                                                      MS
                                                                          : 1,2..1,45
                                                                     mm
                                                                          : 2.5
: 17,0...19,0
2nd speed
                                                      SVS max.
                                                                     mm
Overflow
                    : 55...138
                                                      ХK
                                                                     mm
 quantity cm3/10s: (40...153)
                                                      XL
                                                                          : 13,3...16,7
                                                                     mm
```

A09

Remarks:	
	1 1 1 1 1
	! 
	F 
	# 
A10	

Note inst. in remarks column

Test sheet : CUM 3,9 N4 Edition replaces : 08.07.87

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R226 Type number : 0 460 424 022 Gustomer Part-No. : 390 7152

Customer-specific information Clus tomer : CUMMINS

: 4 BT-3,9IND Engine

TEST BENCH REQUIREMENTS

Calibrating-oil oc return temp.

with thermometer: 40...48 electronically : 42...50

Inlet press, bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

pressure bar : 250...253

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Lienigth mm : 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,8

mm: +-0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 900

Setting value mm: 2,3...2,7

```
Supply-pump pressure:
                                                     Overflow quantity at overflow valve:
Speed
              1/min: 900
                                                     1st speed
                                                                   1/min: 500
Setting value bar: 4,1...4,7
                                                     Oveflow.
                                                                           41...83
                                                                 cm3/10s: (26...98)
1/min: 1100
                                                      quantity
Full-load del. w/out charge press.:
                                                     2nd speed
                                                     Over flow
                                                                          55...138
Speed
             1/min : 750
                                                      quantity cm3/10s: (40...153)
Del.quantity cm3/
             1000H.: 59,0...60,0
                                                     Delivery-quant. and breakaway char.:
               cm3/: 4,0
Dispersion
                                                     1st speed
                                                                   1/min: 1250
                                                     Del.quantity cm3/: 1
             1000H.: (4,5)
                                                                    cm3/: 0,0...2,0
Low-idle speed regulation:
                                                                   1/min: 1210
                                                     2nd special Deliquantity cma/. 1000H.:
                                                     2nd speed
                                                                   cm3/: 0,0...15,0
              1/min: 375
Speed
Del.quantity
              cm3/
                                                                   1/min: 1170
                                                     Del.quantity cms/: 0
                                                     3rd speed
             1000H.: 8,0...14,0
                                                                    cm3/: 0,0...15,0
               cm3/: -
Dispersion
             1000H.: 5.5
                                                     4th speed
                                                                   1/min: 1140
                                                     Del.quantity cm5/: -
1000H.: (43,0...53,0)
Full-load speed regulation:
Speed
              1/min: 1140
                                                     5th speed
                                                                   1/min: 1100
                                                     Del quantity cma/...
                                                                   cm3/: 58,0...61,0
Del.quantity
              cm3/
                                                                           (56,5...62,5)
              1000H: 45,0...51,0
                                                                   1/min: 900
                                                     6th speed
Start:
                                                     Del.quantity cm3/: 57.5...60.5
1000H.: (56.0...62.0)
Speed
              1/min: 100
                                                                   1/min: 750
                                                     7th speed
                                                     Del.quantity cm5/: -
1000H.: (56,5...62,5)
Del.quantity
        cm3/1000H.: 70,0
mind
                                                                   1/min: 500
                                                     8th speed
                                                                   cm3/: 50,0...58,0
Inspection-pump test specifications
                                                     Del.quantity
                                                                   1000H: (49,0...59,0)
Test specifications in parentheses
                                                     Zero delivery (stop):
Timing-device characteristic:
                                                     Electr. shutoff:
1sc speed
              1/min: 750
                                                                   1/min: 375
                                                     Speed
TD travel
                 mm: 1,3...2,1
                                                     ELAB
                                                                    volt: -
                 mm: (1,0...2,4)
                                                     Del.quantity cm3/: - max. 1000H.: -
              1/min: 900
2nd speed
TD travel
                 mm:
                 mm: (1,8...3,2)
                                                     Idle delivery:
              1/min: 1100
3rd speed
                 mm: 3,1...3,9
mm: (2,8...4,2)
TD travel
                                                     Mfg. date: until : -
                                                     1st speed
                                                                   1/min: 375
                                                     Del.quantity cm3/: -
                                                                  1000H.: (6,0...16,0)
Supply-pump pressure characteristic:
                                                                   1/min: 500
                                                     2nd specifically cms/. 1000H.: -
                                                     2nd speed
              1/min: 200
                                                                    cm3/: 0,0...4,0
1st speed
Supply-pump
                bar: 0,8...1,4
 pressure
2nd speed
              1/min: 500
                                                     Automatic starting fuel delivery:
Supply-pump
              bar: 2,3...2,9
1/min: 1100
                                                                   1/min: 110
 pressure
                                                     1st speed
3rd speed
                                                     Del.quantity cm3/: -
Supply-pump
                                                                   1000H: 50,0
                                                      ind.
                bar: 4,9...5.5
pressure
```

2nd speed 1/min: 200 Del.quantity cm3/: ax. 1000H: 50,0

### Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

## Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,1...5,4
MS mm : 1,2..1,45
SVS max. mm : 4,2
XK mm : 18,8...20,8
XL mm : 12,2...15,6

Note inst. in remarks column

Test sheet : CUM 3.9 N7 Edition replaces : 08.07.87

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R226

Type number : 0 460 424 022 Customer Part-No. : 390 7964

Customer-specific information Customer : CUMMINS

: 4 BT-3,9IND Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly ]

Opening |

bar : 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

mm : 0,3 Prestroke

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,8

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

Setting value mm: 2,3...2,7

	!
Supply-pump pressure:	Overflow quantity at overflow valve:
Speed 1/min: 900	1 1st speed 1/min: 500
Setting value bar: 4,14,7	1 Oveflow : 4183
	quantity cm3/10s: (2698)
Full-load del. w/out charge press.:	1 2nd speed 1/min: 1000
• •	1 Overflow : \$5138
Speed 1/min: 750	l quantity cm3/10s: (40153)
Del.quantity cm3/	
1000H.: 75,571,5	<pre>Delivery-quant. and breakaway char.:</pre>
Dispersion cm3/: 4.0	I 1st speed 1/min: 1150
1000H.: (4,5)	i Del.quantity cm3/: 0,02,0 1000H.: -
	1000H.: -
Low-idle speed regulation:	1 2nd speed 1/min: 1130
A / 1	Del.quantity cm3/: 0,015,0
Speed 1/min: 375	1000н.: -
Del.quantity cm3/	3rd speed 1/min: 1090
1000H.: 8,014,0	Del.quantity cm3/: 0,015,0
Dispersion cm3/: - 1000H.: 5,5	
full-load speed regulation:	1 4th speed 1/min: 1050
ratt toda speed regulation:	1 Bel.quantity cm3/: -
Speed 1/min: 1050	1 1000H.: (55.061.0) 1 5th speed 1/min: 1000
Del.quantity cm3/	1 Del quantity cm3/: 67 5 70 5
1000H: 55,061,0	Del.quantity cm3/: 67.570.5 1 1000H.: (66.072.0)
1000 33,00.,0	6th speed 1/min: 900
Start:	Del.quantity cm3/: 69,572,5
	1000H.: (68,074,0)
Speed 1/min: 100	1 7th speed 1/min: 750
Del.quantity : -	Del.quantity cm3/: -
mind cm3/1000H.: 70,0	1 1000H.: (73,079,0)
	8th speed 1/min: 500
Inspection-pump test specifications	Del.quantity cm3/: 75.083.0
Test specifications in parentheses	1 1000H: (74,084,0)
	Zero delivery (stop):
Timing-device characteristic:	
Act cond Alvin 750	Electr. shutoff:
1st speed 1/min: 750	Speed 1/min: 375
TD travel mm: 1,32,1	ELAB volt: -
mm: (1,02,4)	Del. quantity cm3/: -
2nd speed	1 max. 1000H.: -
mm: (1,83,2)	I Idle delivery:
3rd speed 1/min: 1000	1
TD travel mm: 2,73,5	Mfg. date: until : -
mm: (2,43,8)	1 1st speed 1/min: 375
	Pel.quantity cm3/: -
Supply-pump pressure characteristic:	1 1000H.: (6,016,0)
	1 2nd speed 1/min: 500
1st speed 1/min: 200	Del.quantity cm3/: 0,04,0
Supply-pump	1 1000Н.: -
pressure bar: 0,81,4	
2nd speed 1/min: 500	Automatic starting fuel delivery:
Supply-pump	1 104 00001 110 120
pressure bar: 2,32,9	1 1st speed 1/min: 130
3rd speed 1/min: 1000	Del.quantity cm3/: -
Supply-pump pressure bar: 4,95,5	ind. 1000H: 80,0
pressure bar: 4,95,5	1

2nd speed 1/min: 240 Del.quantity cm3/: ax. 1000H: 80,0

# Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

#### Mounting and assembly dimensions:

Designation

KF mm : 5.1..5.4
MS mm : 1.2..1.45
SVS max. mm : 4.2
XK mm : 18.8..20.8
XL mm : 12.2...15,6

Note inst. in remarks column

Test sheet : CUM 3,9 N3 Edition replaces : 07.07.87

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R226 Type number : 0 460 424 022 Customer Part-No. : 390 8186

Customer-specific information Customer : CUMMINS

Engine : 4 BT -3,91ND.

k: 68,5 1/mi: 2100 Power Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. OC

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar : 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length

Start of delivery

Prestroke mm : 0,3

(from BDC): +-0,02(0,04)

Start of delivery block mm: 1,8 Piston stroke

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

```
3rd speed
                                                                    1/min: 1050
Speed
              1/min: 900
                                                      Supply-pump
Setting value mm: 2,3...2,7
                                                       pressure
                                                                      bar: 4,8...5,4
Supply-pump pressure:
                                                      Overflow quantity at overflow valve:
              1/min: 900
                                                      1st speed
                                                                    1/min: 500
Setting value bar: 4,1...4,7
                                                      Oveflow
                                                                          : 41...83
                                                                  cm3/10s: (26...98)
                                                       quantity
Full-load del. W/out charge press.:
                                                      2nd speed
                                                                    1/min: 1050
                                                      Overflow
                                                                          : 55...138
             1/min : 900
Speed
                                                       quantity cm3/10s: (40...153)
Del.quantity cm3/
1000H.: 69,0...70,0
                                                      Delivery-quant. and breakaway char.:
Dispersion
               cm3/: 4,0
                                                      1st speed
                                                                   1/min: 1200
             1000H.: (4,5)
                                                      Del.quantity cm3/: 0,0...2,0
                                                                   1000H.: -
Low-idle speed regulation:
                                                                    1/min: 1180
                                                      2nd speed
                                                      Del.quantity cm3/: 0,0...15,0
1000H.: -
Speed
              1/min: 375
Del.quantity cm5/
1000H.: 8,0...14,0
                                                      3rd speed
                                                                    1/min: 1140
                                                      Del.quantity cm3/: 0,0...15,0
                                                                   1000H.;
Dispersion
               cm3/: -
             1000H.: 5,5
                                                                    1/min: 1110
                                                      4th speed
                                                      Del.quantity cm3/: -
1000H.: (47,0...57,0)
Full-load speed regulation:
Speed
              1/min: 1110
                                                      5th speed
                                                                    1/min: 1050
Deliquantity cm3/
                                                      Del.quantity cm3/: 66,0...69,0
              1000H: 49,0...55,0
                                                                   1000H.: (64,5...70,5)
                                                                    1/min: 900
                                                      6th speed
Start:
                                                      Dei.quantity cm3/: -
                                                      1000H.: (66,5...72,5)
7th speed 1/min: 750
Del.quantity cm3/: 72,0...76,0
1000H.: (71,0...77,0)
Speed
              1/min: 100
Deliquantity
        cm3/1000H.: 70.0
mind
                                                      8th speed
                                                                    1/min: 500
                                                                    cm3/: 72,0...80,0
Inspection-pump test specifications
                                                      Del.quantity
Test specifications in parentheses
                                                                    1000H: (71,9...81,0)
                                                      Zero delivery (stop):
Timing-device characteristic:
                                                      Electr. shutoff:
1st speed
                                                                    1/min: 375
              1/min: 750
                                                      Speed
                 mm: 1,3...2,1
mm: (1,0...2,4)
TD travel
                                                      ELAB
                                                                     volt: -
                                                      Del.quantity cm3/: - max. 1000H.: -
2nd speed
              1/min: 900
TD travel
                  mm: -
              mm: (1,8...3,2)
1/min: 1050
                                                      Idle delivery:
3rd speed
TD travel
                 mm: 2,8...3,6
mm: (2,5...3,9)
                                                      Mfg. date: until : -
                                                      1st speed
                                                                   1/min: 375
                                                      Del.quantity cm3/: -
                                                                   1000H.: (6,0...16,0)
Supply-pump pressure characteristic:
                                                                    1/min: 500
                                                      2nd speed
                                                      Del.quantity cm3/: 0,0...4,0
1000H.: -
1st speed
              1/min: 200
Supply-pump
                bar: 0,8...1,4
 pressure
              1/min: 500
2nd speed
                                                      Automatic starting fuel delivery:
Supply-pump
 pressure
                bar: 2,3...2,9
                                                      1st speed
                                                                    1/min: 130
A18
```

```
Del.quantity cm3/: -
ind. 1000H: 80,0
2nd speed 1/min: 240
Del.quantity cm3/: -
ax. 1000H: 80,0
```

Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

KF mm : 5,1...5,4

MS mm : 1,2..1,45

SVS max. mm : 3,8

XK mm : 18,8...20,8

XL mm : 12,2...15,6

Note inst. in remarks column

Test sheet : CUH 3,9 N5 Edition replaces : 08.07.87

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R226 Type number : 0 460 424 022 Customer Part-No. : 390 8187

Customer-specific information Customer : CUMMINS

Engine : 4 BT-3,9IND

TEST BENCH REQUIREMENTS

Calibrating-oil OC return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

pressure bar : 250...253

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3 (from BDC): +-0,02(0,04)

Start of delivery block Piston stroke mm: 1,8

mm: +-0.02(0.06)

Outlet |

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 900 Speed

Setting value mm: 2,3...2,7

	1
Supply-pump pressure:	Overflow quantity at overflow valve:
Speed 1/min: 900 Setting value bar: 4,14,7 Full-load del. w/out charge press.:	1 1st speed 1/min: 500 1 Oveflow : 4183 1 quantity cm3/10s: (2698) 2nd speed 1/min: 1100 1 Overflow : 55138
Speed 1/min: 750 Del.quantity cm3/	! Overflow : 55138   quantity cm3/10s: (40153)
1000H.: 59.060.0 Dispersion cm3/: 4.0 1000H.: (4,5)	Delivery-quant. and breakaway char.: 1  1st speed   1/min: 1250 1  Del.quantity cm3/: 0,02,0 1  1000H.: -
Low-idle speed regulation:  Speed 1/min: 375	2nd speed 1/min: 1210 Del.quantity cm3/: 0,015,0
Del.quantity cm3/ 1000H.: 8,014,0 Dispersion cm3/: -	3rd speed 1/min: 1170 Del.quantity cm3/: 0,015,0 1 1000H.: -
1000H.: 5,5 Full-load speed regulation:	1 4th speed 1/min: 1140 1 Del.quantity cm3/: -
Speed 1/min: 1140 Del.quantity cm3/ 1000H: 45,051,0	1 1000H.: (43.053.0) 1 5th speed 1/min: 1100 1 Del.quantity cm3/: 58.061.0 1000H.: (56.562.5)
Start:	1 6th speed 1/min: 900 1 Del.quantity cm3/: 57,560,5 1 1000H.: (56,062,0)
Speed 1/mix: 100 Del.quantity : - mind cm3/1000H.: 70,0	/th speed 1/min: /50   Del.quantity cm3/: -   1000H.: (56,562,5)
Inspection-pump test specifications Test specifications in parentheses	8th speed 1/min: 500 Del.quantity cm3/: 50,058,0 1 1000H: (49,059,0)
Timing-device characteristic:	Zero delivery (stop):
1st speed 1/min: 750 TD travel mm: 1,32,1 mm: (1,02,4) 2nd speed 1/min: 900	<pre>I Electr. shutoff: I Speed 1/min: 375 I ELAB volt: - I Del.quantity cm3/: - I max. 1000H.: -</pre>
TD travel mm: - mm: (1,83,2)  3rd speed 1/min: 1100	I Idle delivery:
TD travel mm: 3.13.9 mm: (2,84,2)	Mfg. date: until : -  1 1st speed 1/min: 375  Del.quantity cm3/: -
Supply-pump pressure characteristic:	1 1000H.: (6,016,0) 1 2nd speed 1/min: 500
1st speed 1/min: 200 Supply-pump	Del.quantity cm3/: 0,04,0
pressure bar: 0,81,4 2nd speed 1/min: 500 Supply-pump	Automatic starting fuel delivery:
pressure bar: 2,32,9 3rd speed 1/min: 1100 Supply-pump	1 1st speed 1/min: 110 1 Del.quantity cm3/: - 1 ind. 1000H: 50,0
pressure bar: 4,95,5 A21	1

2nd speed 1/min: 200 bel.quantity cm3/: - 1000H: 50,0

# Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

#### Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,1...5,4
MS mm : 1,3..1,55
SVS max. mm : 4,2
XK mm : 18,8...20,8
XL mm : 12,2...15,6

Note inst. in remarks column

Test sheet : CUM 3,9 N2 Edition replaces : 07.07.87

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R226 Type number : 0 460 424 022 Customer Part-No. : 390 9405

Customer-specific information Customer : CUMMINS

: 4 BT -3,9IND. Engine

Power k: 68,5 1/mi: 2100 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thormometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar : 250...253 pressure

Per for a ted-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,8

mm: +-0.02(0.06)

**Outlet** 

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1050 3rd speed Speed 1/min: 900 Setting value mm: 2,3...2,7 Supply-pump pressure bar: 4,8...5,4 Supply-pump pressure: Overflow quantity at overflow valve: 1/min: 500 Speed 1/min: 900 1st speed Setting value bar: 4,1...4,7 Oveflow : 41...83 cm3/10s: (26...98) quantity 1/min: 1050 Full-load del. w/out charge press.: 2nd speed Over flow : 55...138 Speed 1/min : 900 quantity cm3/10s: (40...153) Del.quantity cm3/ 1000H.: 69,0...70,0 Delivery-quant. and breakaway char.: cm3/: 4,0 Dispersion 1st speed 1/min: 1200 Del.quantity cm3/: 0,0...2,0 1000H.: -1000H.: (4,5) Low-idle speed regulation: 1/min: 1180 2nd speed Del.quantity cm3/: 0,0...15,0 1000H .: -Speed 1/min: 375 Del.quantity cm3/ 3rd speed 1/min: 1140 Del.quantity cms/...1000H.: 1000H.: 8,0...14,0 cm3/: 0,0...15,0 Dispersion cm3/: 1000H.: 5,5 4th speed 1/min: 1110 Full-load speed regulation: Del.quantity cm3/: -1000H.: (47,0...57,0) Speed 1/min: 1110 1/min: 1050 5th speed Del.quantity cm3/ Del.quantity cm3/: 66,0...69,0 1000H.: (64,5...70,5) 1000H: 49,0...55,0 1/min: 900 6th speed Del.quantity cm3/: ~ (66,5...72,5) Start: Speed 1/min: 100 1/min: 750 7th speed Del quantity Del.quantity cm3/: 72,0...76,0 1000H.: (71,0...77,0) cm3/1000H.: 70.0 mind 1/min: 500 8th speed Inspection-pump test specifications Del.quantity cm3/: 72,0...80.0 1000H: (71,0...81,0) Test specifications in parentheses Zero delivery (stop): Timing-device characteristic: Electr. shutoff: 1st speed 1/min: 750 Speed 1/min: 375 mm: 1,3...2,1 mm: (1,0...2,4) TD travel ELAB volt: -Del.quantity cm3/: - max. 1000H.: -2nd speed 1/min: 900 max. TD travel mm: mm: (1,8...3,2) 1/min: 1050 Idle delivery: 3rd speed TD travel mm: 2,8...3,6 Mfg. date: until : mm: (2,5...3,9)1st speed 1/min: 375 Del.quantity cm3/: -Supply-pump pressure characteristic: 1000H.: (6,0...16,0) 1/min: 500 2nd speed Del.quantity cm3/: 0,0...4,0 1000H.: -1st speed 1/min: 200 Supply-pump bar: 0,8...1,4 pressure 2nd speed 1/min: 500 Automatic starting fuel delivery: Supply-pump pressure bar: 2,3...2,9 1st speed 1/min: 130 A24

Note inst. in remarks column

Test sheet : CUM 3,9 N6 Edition replaces : 08.07.87

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R226 Type number : 0 460 424 022 Customer Part-No. : 391 0628

Customer-specific information Customer : CUMMINS

Engine : 4 BT-3,9IND

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. OC

With thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

pressure bar : 250...253

Perforated-plate

diameter num : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm : 0.3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,8

mm: +-0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 900

Setting value mm: 2,3...2,7

```
Supply-pump pressure:
                                                      Overflow quantity at overflow valve:
Speed
              1/min: 900
                                                      1st speed
                                                                     1/min: 500
Setting value bar: 4,1...4,7
                                                      Oveflow
                                                                           : 41...83
                                                                   cm3/10s: (26...98)
                                                        quantity
Full-load del. w/out charge press.:
                                                      2nd speed
                                                                     1/min: 1000
                                                                             55...138
                                                      Overflow
                                                        quantity cm3/10s: (40...153)
Speed
             1/min : 750
Deliquantity cm3/
             1000H.: 75.5...71.5
cm3/: 4,0
                                                      Delivery-quant. and breakaway char.:
Dispersion
                                                                    1/min: 1150
                                                      1st speed
                                                      Del.quantity cm3/: 0,0...2,0
1000H.: -
             1000H.: (4.5)
Low-idle speed regulation:
                                                                     1/min: 1130
                                                      2nd speed
                                                      Del.quantity cm3/: 1900H.:
                                                                     cm3/: 0.0...15.0
Speed
              1/min: 375
Del.quantity
                                                                     1/min: 1090
cm3/: 0,0...15,0
               cm3/
                                                      3rd speed
                                                      Del.quantity cm3/: 1000H.:
             1000H.: 8,0...14,0
Dispersion
                cm3/:
             1000H.: 5,5
                                                                     1/min: 1050
                                                       4th speed
Full-load speed regulation:
                                                      Del.quantity cm3/: -
                                                                    1000H.: (55,0...61,0)
Speed
              1/min: 1050
                                                                     1/min: 1000
                                                       5th speed
                                                      Del.quantity cm3/: 67,5...70,5
1000H.: (66,0...72,0)
Deliquantity
               cm3/
              1000H: 55,0...61,0
                                                                     1/min: 900
                                                       6th speed
                                                      Del.quantity cm3/: 69.5...72.5
1000H.: (68.0...74.0)
7th speed 1/min: 750
Start:
Speed
              1/min: 100
                                                       7th speed
                                                      Del.quantity cm3/: -
1000H.: (73,0...79,0)
Deliquantity
         cm3/1000H.: 70,0
mind
                                                                     1/min: 500
                                                      8th speed
                                                      Del.quantity cm3/: 75.0...83.0
1000H: (74.0...84.0)
Inspection-pump test specifications
Test specifications in parentheses
                                                      Zero delivery (stop):
Timing-device characteristic:
                                                      Electr. shutoff:
1st speed
              1/min: 750
                                                      Speed
ELAB
                                                                     1/min: 375
TD travel
                  mm: 1,3...2,1
                                                                      volt: -
                 mm: (1,0...2,4)
                                                      Del.quantity cm3/: -
                                                                    1000H .: -
2nd speed
              1/min: 900
                                                      max.
TD travel
                 mm:
                      (1,8...3,2)
1000
                 mm:
                                                       Idle delivery:
3rd speed
              1/min:
10 travel
                 mm: 2,7...3,5
                                                      Mfg. date: until : -
                 mm: (2,4...3,8)
                                                                     1/min: 375
                                                       1st speed
                                                      Del.quantity cm3/: -
                                                                    1000H.: (6,0...16,0)
Supply-pump pressure characteristic:
                                                                     1/min: 500
                                                       2nd speed
                                                      Del.quantity cm3/: 0,0...4,0
1000H.: -
              1/min: 200
1st speed
Supply-pump
                bar: 0,8...1,4
 pressure
              1/min: 500
2nd speed
                                                      Automatic starting fuel delivery:
Supply-pump
                bar: 2,3...2,9
 pressure
                                                                     1/min: 130
                                                       1st speed
3rd speed
              1/min: 1000
                                                      Del.quantity cm3/: -
Supply-pump
                                                                     1000H: 80,0
                                                        ind.
 pressure
                bar: 4,9...5,5
```

A27

2nd speed 1/min: 240 Del.quantity cm3/: ax. 1000H: 80,0

## Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

## Mounting and assembly dimensions:

Designation

KF mm : 5.1..5.4
MS mm : 1,3..1,45
SVS max. mm : 4.2
XK mm : 18.8..20.8
XL mm : 12,2...15,6

Note inst. in remarks column

Test sheet : CUM 3,9 E1
Edition : 20.07.87
replaces : 11.12.86
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1150 R226-1 Type number : 0 460 424 023

Customer-specific information Customer : CUMMINS

Engine : 4BT-3.9

Power k: 53 Speed 1/mi: 2300

#### TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

pressure bar : 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,8

mm: +-0,02(0,06)

Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

```
1/min: 900
Speed
                                                        Supply-pump
Setting value mm: 2,0...2,4
                                                                         bar: 5,2...5,8
                                                         pressure
Supply-pump pressure:
                                                        Overflow quantity at overflow valve:
                                                        1st speed
Oveflow
                                                                      1/min: 500
Speed
               1/min: 900
                                                                            : 41...83
Setting value bar: 4,2...4,8
                                                                    cm3/10s: (26...98)
1/min: 1150
                                                         quantity
Full-load del. w/out charge press.:
                                                        2nd speed
                                                        Over flow
                                                                            : 55...138
              1/min : 900
                                                         quantity cm3/10s: (40...153)
Speed
Del.quantity cm3/
              1000H.: 67,0...68,0
                                                        Delivery-quant. and breakaway char.:
                                                        1st speed 1/min: 1300
Del.quantity cm3/: 0,0...2,0
1000H.: -
                cm3/: 4.0
Dispersion
              1000H.: (4,5)
                                                       2nd speed 1/min: 1260
Del.quantity cm3/: 0,0...15,0
1000H.: -
Low-idle speed regulation:
Speed
               1/min: 375
Del.quantity
               cm3/
                                                        3rd speed
                                                                      1/min: 1220
                                                        Del.quantity cm3/: 0,0...15,0
1000H.: -
              1000H.: 8,0...14,0
Dispersion
                cm3/: 5,5
                                                                      1/min: 1190
              1000H.: -
                                                        4th speed
                                                       Del.quantity cm3/: -
1000H.: (45.0...55.0)
5th speed 1/min: 1150
Full-load speed regulation:
               1/min: 1190
Speed
                                                        Del.quantity cm3/: 63,5...66,5
Deliquantity cm3/
                                                                     1000H.: (62,0...68,0)
               1000H: 47,0...53,0
                                                                      1/min: 900
                                                        6th speed
                                                       Oth speed 1/min: 750 73.5
Start:
               1/min: 100
Speed
                                                        Del.quantity cm3/: 69,5...73,5
1000H.: (67,8...75,2)
Del.quantity
         cm3/1000H.: 70,0
mind '
                                                                      1/min: 500
                                                        8th speed
                                                        Del.quantity cm3/: 68,0...76,0
1000H: (67,0...77,0)
Inspection-pump test specifications
Test specifications in parentheses
                                                        Zero delivery (stop):
Timing-device characteristic:
                                                        Electr. shutoff:
               1/min: 750
                                                        Speed
ELAB
                                                                      1/min: 375
1st speed
                  mm: 0,8...1,6
TD travel
                                                                       volt: -
                                                        Del.quantity cm3/: - max. 1000H.: -
                  mm: (0,5...1,9)
2nd speed
               1/min: 900
TD travel
                  mm:
               mm: (1,5...2,9)
1/min: 1150
                                                        Idle delivery:
3rd speed
TD travel
                  mm: 3,2...4,0
                                                        Mfg. date: until : -
                                                                      1/min: 375
                  mm: (2,9...4,3)
                                                        1st speed
                                                        Del.quantity cm3/: -
                                                                     1000H.: (6,0...16,0)
Supply-pump pressure characteristic:
                                                                      1/min: 500
                                                        2nd speed
                                                       Del.quantity cm3/: 0,0...4,0
1000H.: -
               1/min: 200
1st speed
Supply-pump
                 bar: 0,9...1,5
pressure
               1/min: 500
2nd speed
                                                        Automatic starting fuel delivery:
Supply-pump
               bar: 2,5...3,1
1/min: 1150
 pressure
                                                        1st speed
                                                                      1/min: 130
3rd speed
```

BOZ

```
Del.quantity cm3/: -
ind. 1000H: 80,0
                1/min: 240
2nd speed
Del.q.antity cm3/: -
ax. 1000H: 80,0
Shutoff electromagnet:
Cut-in
min. voltage : 10,0
Rated voltage : 12,0
Mounting and assembly dimensions:
Designation
K
KF
                   mm
                       5.1...5.4
: 1.2..1.45
: 4.0
: 18.8...20.8
: 11.7...15.1
                   mm
MS
                   mm
SVS max.
                   mm
XK
                   mm
XL
                   mm
```

Note inst. in remarks column

Test sheet : CUH 3,9 N : 07.07.87 Edition replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R226-2 Type number : 0 460 424 024

Customer Part-No.: 390 7151

Customer-specific information Customer : CUMMINS

Engine : 4 BT-3,9IND

Power k: 64 1/mi: 2500 Speed

#### TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

\*\*\*\*\*\*\*\*\*

bar : 250...253 pressure

Perforated-plate

diameter mate : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block mm: 1,8 Piston stroke

mm: +-0.02(0.06)

**Outlet** 

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

```
3rd speed
                                                                  1/min: 1100
Speed
            1/min: 900
                                                    Supply-pump
Setting value mm: 2,0...2,4
                                                                    bar: 5,4...6,0
                                                     pressure
Supply-pump pressure:
                                                    Overflow quantity at overflow valve:
Speed
             1/min: 900
                                                                  1/min: 500
                                                    1st speed
Setting value bar: 4,6...5,2
                                                    Oveflow
                                                                        : 41...83
                                                                cm3/10s: (26...98)
1/min: 1250
                                                     quantity -
Full-load del. w/out charge press.:
                                                    2nd speed
                                                    Over flow
                                                                       : 55...138
             1/min : 1100
Speed
                                                     quantity cm3/10s: (40...153)
Deliquantity cm3/
             1000H.: 57.5...58,5 cm3/: 4,6
                                                    Delivery-quant. and breakaway char.:
Dispersion
                                                    1st speed
                                                                 1/min: 1400
             1000H.: (4,5)
                                                    Del.quantity cm3/: 0,0...2,0
                                                                 1000H .: -
Low-idle speed regulation:
                                                    2nd speed
                                                                  1/min: 1370
                                                    Del.quantity cm3/: 0,0...15
1000H.: -
Speed
              1/min: 335
Deliquantity
              cm3/
                                                    3rd speed
                                                                  1/min: 1330
             1000H.: 8,0...14,0
                                                    Del. quantity cm3/: 0,0...15,0
                                                                 1000H .: -
Dispersion
               cm3/: -
             1000H.: 5,5
                                                                  1/min: 1300
                                                    4th speed
full-load speed regulation:
                                                    Del.quantity cm3/: -
                                                                 1000H.: (38,0...48,0)
                                                    5th speed 1/min: 1250
Del.quantity cm3/: 55,5...58,5
Speed
              1/min: 1300
Del.quantity cm3/
              1000H: 40,0...46,0
                                                                 1000H.: (54,0...60,0)
                                                                  1/min: 1100
                                                    6th speed
Start:
                                                    Del.quantity
                                                                  cm3/: -
                                                                 1000H.: (55,0...61,0)
Speed
                                                                  1/min: 750
              1/min: 100
                                                    7th speed
                                                    Del.quantity cm3/: 55.5...59.5
1000H.: (54.5...60.5)
Del.quantity
       ch3/1000H.: 70,9
mind
                                                                  1/min: 500
                                                    8th speed
                                                    Del.quantity cm3/: 49,0...57,0
Inspection-pump test specifications
Test specifications in parentheses
                                                                  1000H: (48,0...58,0)
                                                    Zero delivery (stop):
Timing-device characteristic:
                                                    Electr. shutoff:
1st speed
              1/min: 750
                                                    Speed
                                                                  1/min: 335
TD travel
                 mm: 0,8...1,6
                                                    ELAB
                                                                   volt: -
                 mm: (0,5...1,9)
                                                    Del.quantity cm3/: -
                                                                 1000H.: -
2nd speed
              1/min: 900
                                                    max.
TD travel
                 mm: -
                 mm: (1,5...2,9)
                                                    Idle delivery:
3rd speed
              1/min: 1100
TD travel
                 mm: 2,9...3,7
                                                    Mfg. date: until : - 1st speed 1/min: 3
                 mm: (2,6...4,0)
                                                                 1/min: 335
                                                    Deliquantity cm3/:
Supply-pump pressure characteristic:
                                                                 1000H.: (6,0...16,0)
                                                                  1/min: 500
                                                    2nd speed
              1/min: 200
1st speed
                                                    Del.quantity cm3/: 0,0...4,0
                                                                 1000H.: -
Supply-pump
                bar: 1,3...1,9
pressure
              1/min: 750
2nd speed
                                                    Automatic starting fuel delivery:
Supply-pump
 pressure
                bar: 3,9...4,5
                                                    1st speed
                                                                  1/min: 130
```

805

Del.quantity cm3/: - 1000H: 60,0 2nd speed 1/min: 230 Del.quantity cm3/: -ax. 1000H: 60,0 Shutoff electromagnet: Cut-in min. voltage Rated voltage : 10,0 : 12,0 Mounting and assembly dimensions: Designation K KF MS mm : mm : 5,1...5,4 mm : 1,2..1,45 mm : 4,2 SVS max.

Note inst. in remarks column

Test sheet : CUM 3.9 N1 Edition : 07.07.87 replaces : -

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R226-2 Type number : 0 460 424 024

Customer Part-No.: 391 2245

Customer-specific information Customer : CUMMINS

Engine : 4 BT-3,9IND

Power k: 64 Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar : 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 nım : 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,8

mm: 0,02(0,06)

Outlet |

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 3rd speed Speed 1/min: 900 Supply-pump Setting value mm: 2.0...2.4 pressure bar: 5,4...6,0 Supply-pump pressure: Overflow quantity at overflow valve: Speed 1/min: 900 1st speed 1/min: 500 Setting value bar: 4,6...5,2 : 41...83 **Oveflow** cm3/10s: (26...98) quantity Full-load del. w/out charge press.: 2nd speed 1/min: 1250 Overflow : 55...138 Speed 1/min : 1100 quantity cm3/10s: (40...153) Del.quantity cm3/ 1000H.: 57,5...58,5 Delivery-quant. and breakaway char.: Dispersion cm3/: 4,0 1st speed 1/min: 1400 Del.quantity cm3/: 0,0...2,0 1000H.: -1000H.: (4,5) Low-idle speed regulation: 1/min: 1370 Del.quantity cms/. 1000H.: -2nd speed cm3/: 0,0...15 1/min: 335 Speed Del.quantity cm3/ 1/min: 1330 Del.quantity cma/. - 1000H.: -3rd speed 1000H.: 8,0...14,0 cm3/: 0,0...15,0 Dispersion cm3/: -1000H.: 5,5 1/min: 1300 4th speed Del.quantity cm3/: -1000H.: (38,0...48,0) Full-load speed regulation: 5th speed 1/min: 1250
Del.quantity cm3/: 55.5...58.5
1000H.: (54.0...60.0)
6th speed 1/min: 1100 Speed 1/min: 1300 Del.quantity cm3/ 1000H: 40,0...46,0 Del.quantity cms/: -1000H.: (55,0...61,0) Start: Speed 1/min: 100 1/min: 750 7th speed Del.quantity Del.quantity cm3/: 55,5...59,5 cm3/1000H.: 70,0 1000H.: (54,5...60,5) mind 1/min: 500 8th speed cm3/: 49,0...57,0 Inspection-pump test specifications Deliquantity Test specifications in parentheses 1000H: (48,0...58,0) Zero delivery (stop): Timing-device characteristic: Electr. shutoff: 1st speed 1/min: 750 1/min: 335 Speed TD travel mm: 0,8...1,6 ELAB volt: -Del.quantity cm3/: - max. 1000H.: mm: (0,5...1,9)1/min: 900 2nd speed TD travel mm: mm: (1,5...2,9) Idle delivery: 3rd speed 1/min: 1100 10 travel mm: 2,9...3,7 Mfg. date: until : mm: (2,6...4,0)1st speed 1/min: 335 Del.quantity cm3/: -1000H.: (6,0...16,0) Supply-pump pressure characteristic: 1/min: 500 2nd speed Del.quantity cm3/: 0,0...4,0 1000H.: -1st speed 1/min: 200 Supply-pump bar: 1,3...1,9 1/min: 750 pressure 2nd speed Automatic starting fuel delivery: Supply-pump bar: 3,9...4,5 pressure 1/min: 130 1st speed 808

Del.quantity cm3/: - ind. 1000H: 60,0 2nd speed 1/min: 230 Del.quantity cm3/: -ax. 1000H: 60,0 Shutoff electromagnet: Cut-in Cut-in min. voltage : 20,0 Rated voltage : 24,0 Mounting and assembly dimensions: Designation K KF mm : mm : 5,1...5,4 mm : 1,2..1,45 mm : 4,2 MS SVS max.

Note inst. in remarks column

Test sheet : CUM 3,9 N8 Edition replaces : 08.07.87

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1150 R231-1 Type number : 0 460 424 029 Customer Part-No. : 390 8196

Customer-specific information Customer : CUMMINS

: 4 BTA-3.9 Engine

k: 79 Power Speed 1/mi: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar : 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,55

mm: +-0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1	1 TO Append
Speed 1/min: 750	TD travel mm: - mm: (3,34,7)
Charge press. hPa: 1000	1 3rd speed 1/min: 1100
Setting value mm: 3,84,2	Charge press. hPa: 1000
	I TD travel mm: 4,95,7
Supply-pump pressure:	mm: (4,66,0)
Speed 1/min: 750	<pre>Supply-pump pressure characteristic:</pre>
Charge press. hPa: 1000	
Setting value bar: 5,15,7	1 1st speed 1/min: 500
Call took to the state of	Charge press. hPa: 1000
full-load del. with charge press.:	Supply-pump pressure bar: 3,94,5 2nd speed 1/min: 1100
Speed 1/min 950	pressure bar: 3,94,5
Speed	Change energy bigs 1000
Del quantity cm3/	Charge press. hPa: 1000
Del.quantity cm3/ 1000H.: 85,586,5	Supply-pump bar: 6,57,1
Dispersion cm3/: 4,0	
1000H : (4,5)	Overflow quantity at overflow valve:
	1
Full-load del. W/out charge press.:	1 1st speed 1/min: 500
	Charge press. hPa: -
Speed	1 Oveflow : 4183
Del.quantity cm3/	quantity cm3/10s: (2698)
1000H.: 66,567,5	2nd speed 1/min: 1100
Low-idle speed regulation:	I Charge press. hPa: 1000 I Overflow : 55138
as in the speed regarderon.	quantity cm3/10s: (40153)
Speed 1/min: 375	1
Charge press. bPa: -	<pre>Delivery-quant. and breakaway char.:</pre>
Del.quantity cm3/	1 1st speed 1/min: 700
Del.quantity cm3/ 1000H.: 8,014,0	Charge-air pressure-setting
Dispersion cm3/: -	point hPa: 350
1000H.: 5,5 Full-load speed regulation:	Del.quantity cm3/: 82.083.0 1000H.: (79.585.5)
The state of the s	1 2nd speed 1/min: 1260
Speed 1/min: 1170	I Charge press. hPa: 1000
Charge press. hPa: 1000	Del.quantity cm3/: 0,02,0
Del.quantity cm3/	1000H.: -
1000H: 63,G69,0	i 3rd speed 1/min: 1250
04004	Charge press. hPa: 1000
Start:	l Del.quantity cm3/: 0,015,0
Speed 1/min: 100	1 1000H.: - 1 4th speed 1/min: 1220
Charge press. hPa: -	Charge press. hPa: 1000
Del.quantity : -	Del.quantity cm3/: 0,015,0
mind cm3/1000H.: 60.0	1 1000H.: -
	1 5th speed 1/min: 1170
Inspection-pump test specifications	I Charge press. hPa: 1000
Test specifications in parentheses	Del.quantity cm3/: -
	1000H.: (61,071,0)
Timing-device characteristic:	l 6th speed 1/min: 1100 l Charge press. hPa: 1000
, , , , , , , , , , , , , , , , , , ,	1 Del.quantity cm3/: 77,580,5
1st speed 1/min: 500	1 1000H.: (76,082,0)
Charge press. hPa: 1000	7th speed 1/min: 1000
TD travel mm: 2,23,0	1 Charge press. hPa: 1000
mm: (1,93,3)	l Del.quantity cm3/: 80,083,0
2nd speed 1/min: 750	1 1000H.: (78,584,5)
Charge press. hPa: 1000	8th speed 1/min: 850

B11

```
Charge press. hPa: 1000
Deliquantity cm3/: -
              1000H: (83,0...89,0)
9th speed
              1/min: 500
Charge press.
                hPa: 1000
Del.quantity cm3/: 90,0...98,0
              1000H: (89,0...99,0)
              1/min: 500
10th speed
Charge press. hPa:
              cm3/: -
Deliquantity
              1000H: (64,0...70,0)
Zero delivery (stop):
Electr. shutoff:
Speed
              1/min: 375
ELAB
ELAB
Del.quantity cms/.
1000H.: -
               volt: -
Idle delivery:
Mfg. date: until
             1/min: 350
1st speed
Del.quantity cm3/: 26.0..34.0
1000H.: (25.0..35.0)
              1/min: 375
2nd speed
Del.quantity cm3/: -
1000H.: (6,0...16,0)

Red speed 1/min: 450
              cm3/: 0,0...4,0
Deliquantity
             1000H.: -
Automatic starting fuel delivery:
1st speed
              1/min: 130
Charge press. hPa: -
Deliquantity cm3/: -
              1000H: 65,0
 ind.
2nd speed
              1/min: 240
Charge press. hPa: -
Deliquantity cm3/: -
              1000H: 65,0
 ax,
Shutoff electromagnet:
Cut-in
                   : 10,0
 min, voltage
Rated voltage : 12,0
Mounting and assembly dimensions:
Designation
               mm
KF
                  : 5,1...5,4
               mm
MS
               mm
SVS max.
               mm
Remarks:
B12
```

Correction at adjusting nut (46)

```
BOSCH-INJ.-PUMP TEST SPECIFICATIONS
                                                                   1/min: 750
                                                     Speed
                                                     Charge press. hPa: 1000
Setting value mm: 3,8...4,2
Note inst. in remarks column
Test sheet
                   : CUM 3.9 N9
: 08.07.87
                                                     Supply-pump pressure:
Edition
replaces
                                                                  1/min: 750
Calibrating oil : ISO 4113
                                                     Charge press. hPa: 1000
                                                     Setting value bar: 5,1...5,7
Injection pump : VE 4/12F1150 R231-1
                   : 0 460 424 029
Type number
                                                     Full-load del. with charge press.:
Customer Part-No.: 390 9407
                                                                   1/min: 850
                                                     Speed
Customer-specific information
                                                     Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 85,5...86,5
Customer
                   : CUMMINS
Engine
                   : 4 BTA-3.9
                                                                  cm3/:4,0
                                                     Dispersion
                                                                  1000H : (4,5)
                  k: 79
Power
Speed
               1/mi: 2200
                                                     Full-load del. w/out charge press.:
TEST BENCH REQUIREMENTS
                                                     Speed
                                                                  1/min : 500
                                                     Del.quantity cm3/
1000H.: 66,5...67,5
Calibrating-oil return temp. °C
with thermometer : 40...48
                                                     Low-idle speed regulation:
                  : 42...50
electronically
                                                     Speed
                                                                   1/min: 375
Inlet press., bar : 0,35
                                                     Charge press. hPa: -
                                                     Del.quantity cm3/
1000H.: 8,0...14,0
Calibrating nozzle-holder
 assembly
                  : 1 688 901 027
                                                     Dispersion
                                                                    cm3/: -
                                                                  1000H.: 5,5
Opening
                                                     full-load speed regulation:
 pressure
               bar : 250...253
                                                                   1/min: 1170
                                                     Speed
Perforated-plate
                                                     Charge press. hPa: 1000
 diameter
                mm : 6.5
                                                     Del.quantity cm3/
                                                                   1000H: 63,0...69,0
Test inj. tubing : 1 680 750 017
                                                     Start:
Outside diameter : 6
                                                     Speed
                                                                   1/min: 100
x Wall thickness : 2
                                                     Charge press. hPa: -
              mm : 840
x Length
                                                     Del.quantity
                                                     mind
                                                              cm3/1000H.: 60,0
Start of delivery
Prestroke mm: 0,3
                                                     Inspection-pump test specifications
         (from BDC): +-0.02(0.04)
                                                     Test specifications in parentheses
Start of delivery block
Piston stroke
                 mm: 1,55
                                                     Timing-device characteristic:
                 mm: +-0,02(0,06)
Outlet
                                                                   1/min: 500
                                                     1st speed
                                                     Charge press. hPa: 1000
TD travel mm: 2,2...3,0
mm: (1,9...3,3)
2nd speed 1/min: 750
Injection-pump setting values
Test specifications in parentheses
Timing-device travel:
                                                     Charge press. hPa: 1000
B13
```

```
TD travel
                  mm:
                                                       Charge press. hPa: 1000
                  mm: (3,3...4,7)
                                                       Deliquantity cm3/: -
3rd speed
              1/min: 1100
                                                                     1000H: (83,0...89,0)
Charge press.
                 hPa: 1000
                                                                      1/min: 500
                                                       9th speed
                                                       Charge press. hPa: 1000
Del.quantity cm3/: 90.0...98.0
1000H: (89.0...99.0)
TD travel
                  mm: 4,9...5,7
                  mm: (4,6...6,0)
                                                                      1/min: 500
Supply-pump pressure characteristic:
                                                       10th speed
                                                                        hPa: -
                                                       Charge press.
              1/min: 500
ist speed
                                                       Del.quantity
                                                                      cm3/: -
                hPa: 1000
Charge press.
                                                                      1000H: (64,0...70,0)
Supply-pump
 pressure
                 bar: 3,9...4,5
                                                       Zero delivery (stop):
2nd speed
              1/min: 1100
                hPa: 1000
Charge press.
                                                       Electr. shutoff:
Supply-pump
                                                       Speed
                                                                     1/min: 375
 pressure
                 bar: 6,5...7,1
                                                       ELAB
                                                                      volt: -
                                                       Del.quantity cm3/: - max. 1000H.: -
Overflow quantity at overflow valve:
1st speed
              1/min: 500
                                                       Idle delivery:
Charge press. hPa: -
Oveflow
                    : 41...83
                                                       Mfg. date: until : -
quantity cm3/10s: (26...98)
2nd speed 1/min: 1100
                                                                    1/min: 350
                                                       1st speed
                                                       Del.quantity cm3/: 26,0..34,0
1000H.: (25,0..35,0)
Charge press. hPa: 1000
Overflow : 55..
                    : 55...138
                                                                     1/min: 375
                                                       2nd speed
                                                       Del.quantity cm3/: -
1000H.: (6,0...16,0)
 quantity cm3/10s: (40...153)
Delivery-quant. and breakaway char.:
                                                       3rd speed
                                                                     1/min: 450
                                                       Del.quantity cm3/: 0,0...4,0
1000H.: -
1st speed
             1/min: 700
Charge-air pressure-setting
                hPa: 350
 point
Del.quantity cm3/: 82.0...83.0
1000H.: (79.5...85.5)
                                                       Automatic starting fuel delivery:
2nd speed
              1/min: 1260
                                                       1st speed
                                                                      1/min: 130
Charge press. hPa: 1000
                                                       Sharge press. hPa: -
Deliquantity cm3/: 0,0...2,0
                                                       Del.quantity cm3/: -
             1000H.: -
                                                                      1000H: 65,0
                                                        ind.
3rd speed
              1/min: 1250
Charge press. hPa: 1000
                                                                     1/min: 240
                                                       2nd speed
Deliquentity cm3/: 0.0...15.0
                                                       Charge press. hPa: -
                                                       Del.quantity cm3/: -
4th speed
              1/min: 1220
                                                                     1000H: 65,0
Charge press. hFa: 1000
Del.quantity cm3/: 0,0...15,0
                                                       Shutoff electromagnet:
             1000H.: -
5th speed
              1/min: 1170
                                                       Cut-in
Charge press. hPa: 1000
                                                                           : 20,0
                                                        min. voltage
               cm3/: -
                                                       Rated voltage
Deliquantity
                                                                           : 24,0
             1000H.: (61,0...71,0)
1/min: 1100
6th speed
                                                       Mounting and assembly dimensions:
Charge press. hPa: 1000
Del.quantity cm3/: 77,5...80,5
                                                       Designation
             1000H.: (76,0...82,0)
                                                       K
                                                                      mm
              1/min: 1000
7th speed
                                                       KF
                                                                           : 5,1...5,4
                                                                      mm
                                                                           : 1,2..1,45
: 2,2
Charge press. hPa: 1000
                                                       MS
                                                                      mm
Del.quantity cm3/: 80.0...83.0
1000H.: (78,5...84,5)
                                                       SVS max.
                                                                      mm
8th speed
              1/min: 850
                                                       Remarks:
B14
```

Correction at adjusting nut (46)	1 1
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<b>B15</b>	•

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet : PER 5,8 B3 Edition : 29.06.87 replaces Calibrating oil : ISO 4113 Injection pump : VE 6/12F1300 L73 : 0 460 426 020 Type number Customer-specific information Customer : PERKINS : 16.354.4 Engine TEST BENCH REQUIREMENTS Calibrating-oil return temp. °C With thermometer : 40...48 electronically : 42...50 Inlet press., bar : 0,35 Calibrating nozzle-holder assembly : 1 688 901 020 Opening bar: 172...175 pressure Perforated-plate diameter mm : 0.6 Test inj. tubing : 1 680 750 017 Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length Start of delivery Prestroke mm: 0,3 (from BDC): +-0,02(0,04) Injection-pump setting values Test specifications in parentheses Timing-device travel: Speed 1/min: 600 Charge press. hPa: -Setting value mm: 3,1...3,5 Supply-pump pressure: Speed 1/min: 600 Charge press. hPa: -

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Setting value bar: 3,4...4,0 Full-load del. with charge press.: Speed 1/min: 1000 Charge press. hPa: 750 Del.quantity cm3/ 1000H.: 95.5...96.5 Dispersion cm3/: 3.5 1000H: -Full-load del. w/out charge press.: 1/min : 1000 Del.quantity cm3/ 1000H.: 91,5...92,5 Low-idle speed regulation: 1/min: 300 Speed Del.quantity cm3/ 1000H.: 10.0...14,0 Dispersion cm3/: 3,5 1000H.: full-load speed regulation: 1/min: 1480 Speed Charge press. hPa: 750 Del.quantity cm3/ 1000H: 42,0...48,0 Start: 1/min: 100 Speed Del.quantity mind cm3/1000H.: 100,0 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 1st speed 1/min: 400 Charge press. hPa: -TD travel mm: 0,4...1,2 mm: (0,1...1,5)1/min: 600 2nd speed Charge press. hPa: -TD travel mm: min: (2,6...4,0)3rd speed 1/min: 800 Charge press. hPa: mm: 3,6...4,4 mm: (3,3...4,7) TD travel Supply-pump pressure characteristic: 1st speed 1/min: 400 Charge press. hPa: -

Supply-pump Idle delivery: pressure bar: 2,4...3,0 2nd speed 1/min: 600 Mfg. date: until Charge press. Supply-pump hPa: -1st speed 1/min: 300 Del.quantity cm3/: -1000H.: (7,0...17,0) bar: 3,1...3,5 1/min: 1300 pressure 3rd speed 1/min: 350 2nd speed Del.quantity cm3/: 0,0...1,0 1000H.: -Charge press. hPa: -Supply-pump pressure bar: 6,9...7,5 3rd speed 1/min: 400 Del.quantity cm3/: 0,0...1,0 1000H.: -Overflow quantity at overflow valve: ist speed 1/min: 500 Automatic starting fuel delivery: Charge press. hPa: Oveflow 41...83 1/min: 200 1st speed quantity cm3/10s: (26...98) Del.quantity cm3/: -2nd speed 1/min: 1300 1000H: 85,0 ind. Charge press. hPa: -Overflow : 55...138 Shutoff electromagnet: quantity cm3/10s: (40...153) Cut-in Delivery-quant, and breakaway char.: : 10,0 min. voltage 1/min: 700 1st speed Raced voltage : 12.0 Charge-air pressure-setting point hPa: 320 Mounting and assembly dimensions: mm: 3,5 cm3/: 92,5...94,5 1000H.: (39,8...97,2) LDA stroke Del.quantity Designation mm 1/min: 1550 KF 5,1...5,3 2nd speed mm : 1,1...1,3 Charge press. hPa: 750 MS mm Del.quantity cm3/: 5.0...13.0 1000H.: (4.0...14.0) SVS max. mm : 6,0 : 20,2...22,2 XK mm 1/min: 1480 3rd speed XL mta : 10,6...13,9 Del.quantity cm3/: -1000H.: (40,0...50,0) Remarks: 1/min: 1300 4th speed Charge press. hPa: 750 Del.quantity cm3/: 89,0...92,0 1000H.: (87,5...93,5) Correction at adjusting nut (46) 1/min: 1000 5th speed Charge press. hPa: Del quantity cm3/: -1000H.: (89,0...95,0) 1/min: 1000 6th speed Charge press. hPa: 750 Del.quantity cm3/: -1000H.: (93,0...99,0) 1/min: 500 7th speed Charge press. hPa: Del.quantity cm3/: 88,0...92,0 1000H.: (£6,3...93,7) Zero delivery (stop): Mech, shutoff: Speed 1/min: 1300 Del.quantity cm3/: -1000H.: -

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet : MAN 5,6 K Edition : 30.06.87 replaces : 09.83 Calibrating oil : ISO 4113 Injection pump : VE 6/12F1400 R120 Type number : 0 460 426 028 Customer-specific information Customer : MAN Engine : D 0226 MK/170 Power k: 125 Speed 1/mi: 2800 TEST BENCH REQUIREMENTS Calibrating-oil return temp. °C with thermometer : 40...48 : 42...50 electronically Inlet press., bar: 0,35 Calibrating nozzle-holder assembly : 1 688 901 000 Opening pressure bar : 147...150 Test inj. tubing : 1 680 750 017 Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length Start of delivery mm : 0,2 Prestroke (from BDC): +-0.02(0.04) Injection-pump setting values Test specifications in parentheses Timing-device travel: Speed 1/min: 630 Charge press. hPa: 1000 Setting value mm: 3,2...3,6 Supply-pump pressure: Speed 1/min: 630

Setting value bar: 5,6...6,2 full-load del. with charge press.: Speed 1/min: 1000 Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 106,5...107,5 Dispersion cm3/:4.01000H : (4.5)Full-load del. w/out charge press.: Speed 1/min : 630 Del.quantity cm3/ 1000H.: 77,5...78,5 Low-idle speed regulation: Speed 1/min: 300 Del.quantity cm3/ 1000H.: 10,0...16,0 cm3/: 3,5 1000H.: (4,5) Dispersion Full-load speed regulation: Speed 1/min: 1440 Charge press. hPa: 1000 Deliquantity cm3/ 1000H: 87,0...93,0 Start: Speed 1/min: 100 Del.quantity cm3/1000H.: 80.0 mind ' Load-dependent start of delivery: Speed 1/min: 630 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 1st speed 1/min: 400 Charge press. hPa: 1000 mm: 2,0...2,8 mm: (1,7...3,1) 1/min: 630 TD travel 2nd speed Charge press. hPa: 1000 TD travel mm: mm: (2,7,...4)1/min: 800 3rd speed Charge press. hPa: 1000 mm: 4.0...4.8 TD travel mm: (3, 7, ..., 5, 1)

Charge press. hPa: 1000

```
Supply-pump pressure characteristic:
                                                         Del.quantity cm3/: 106,0...110,0
                                                                         1000H: (104,3...111,7)
               1/min: 400
1st speed
                                                         10th speed
                                                                         1/min: 630
Charge press. hPa: 1000
                                                         Charge press. hPa:
                                                         Del.quantity cm3/: 77.5....78.5
1000H: (75,0...81,0)
Supply-pump
               bar: 5,1...5,7
1/min: 1400
 pressure
2nd speed
Charge press. hPa: 1000
                                                         Zero delivery (stop):
Supply-pump
                 bar: 7,5...8,1
 pressure
                                                         Mech. shutoff:
                                                                         1/min: 1400
                                                         Speed
Overflow quantity at overflow valve:
                                                         Del.quantity cm3/: -
                                                                        1000H.: -
ist speed
               1/min: 630
Charge press. hPa: -
                                                         Idle delivery:
Oveflow
                     : 41...83
 quantity cm3/10s: (26...98)
                                                         Mfg. date: until
2nd speed 1/min: 1400
                                                                       1/min: 300
                                                         ist speed
                                                         Del.quantity cm3/: -
1000H.: (8.0...18.0)
2nd speed 1/min: 350
Charge press. hPa: 1000
Overflow: 55...
                     : 55...139
 quantity cm3/10s: (40...153)
                                                         Del.quantity cm3/: 0,0...5,0
Dolivery-quant. and breakaway char.:
1st speed
              1/min: 630
                                                          3rd speed
                                                                         1/min: 400
                                                         Del.quantity cm3/: 0,0...4,0 1000H.: -
Charge-air pressure-setting
 point
                 hPa: 300
LDA stroke mm: 4.5
Del.quantity cm3/: 101.5...102.5
1000H.: (99.0...105.0)
2nd speed 1/min: 1620
                                                         Automatic starting fuel delivery:
                                                          1st speed
                                                                         1/min: 350
Charge press. hPa: 1000
                                                         Del.quantity cm3/: -
Del.quantity cm3/: 0,0...2,0
                                                           ind.
                                                                         1000H: 80,0
3rd speed
               1/min: 1590
                                                         2nd speed
                                                                         1/min: 450
Charge press. hPa: 1000
Del.quantity cm3/: 0.0...15.0
1000H.: -
                                                         Del.quantity
                                                                         cm3/: -
                                                                         1000H: 85,0
4th speed
               1/min: 1540
                                                         Mounting and assembly dimensions:
Charge press. hPa: 1000
Del.quantity cm3/: 0,0...15,0
1000H.: -
                                                         Designation
                                                         K
                                                                          mm
5th speed
                                                         KF
               1/min: 1440
                                                                               : 5,7...6,0
                                                                          mm
Charge press. hPa: 1000
                                                                               : 0,7..0,95
                                                         MS
                                                                          mm
Del.quantity cm3/: -
1000H.: (85,0...95,0)
                                                         SVS max.
                                                                          mm
               1/min: 1400
6th speed
                                                         Remarks:
Charge press. hPa: 1000
Del.quantity cm3/: 99.5...102.5
1000H.: (98.0...104.0)
                                                         Correction at adjusting nut (46)
               1/min: 1000
7th speed
Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: (104,0...110,0)
               1/min: 800
8th speed
Charge press. hPa: 1000
Del.quantity cm3/: 102,0...106,0
               1900H: (100,3...107,7)
9th speed
               1/min: 630
Charge press, hPa: 1000
```

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Speed 1/min: 850 Setting value mm: 3,8...4,2 Note inst. in remarks column Supply-pump pressure: Test sheet : CUM 5,9 UZ : 07.07.87 Edition 1/min: 850 replaces Setting value bar: 3,9...4,5 Calibrating oil : ISO 4113 Full-load del. w/out charge press.: : VE 6/12F1325 R198 Injection pump Type number : 0 460 426 063 1/min : 1100 Speed Customer Part-No. : 390 8212 Del.quantity cm3/ 1000H.: 56,5...57,5 cm3/: 4,0 Customer-specific information Dispersion Customer : CUMMINS 1000H.: (4,5) Engine : 6 BT-5\_9 Low-idle speed regulation: k: 93 Power Speed 1/min: 375 1/mi: 2800 Speed Deliquantity cm3/ 1000H.: 8,0...14,0 TEST BENCH REQUIREMENTS cm3/: Dispersion 1000H.: 5,5 Calibrating-oil return temp. C Full-load speed regulation: with thermometer: 40...48 1/min: 1450 electronically : 42...50 Del.quantity cm3/ 1000H: 37,0...43,0 Inlet press., bar : 0,35 Start: Calibrating nozzle-holder : 1 688 901 027 assembly 1/min: 100 Speed Del.quantity cm3/1000H.: 50.0 Opening mind bar : 250...253 pressure Inspection-pump test specifications Perforated-plate Test specifications in parentheses mm:0.5diameter Timing-device characteristic: Test inj. tubing : 1 680 750 017 1st speed 1/min: 500 Outside diameter : 6 TD travel mm: 1,5...2,3 x Wall thickness mm: (1,2...2,6)mm : 840 1/min: 850 x Length 2nd speed TD travel mm: -Start of delivery mm: (3,3...4,7)Prestroke mm : 0,3 1/min: 1100 3rd speed mm: 5,4...6,2 mm: (5,1...6,5) (from BDC): +-0.02(0.04)TD travel Start of delivery block Piston stroke mm: 1,5 Supply-pump pressure characteristic: mm: +-0,02(0,06) Outlet 1/min: 500 1st speed Supply-pump bar: 2,5...3,1 pressure Injection-pump setting values 1/min: 1100 Test specifications in parentheses 2nd speed Supply-pump Timing-device travel: bar: 4,9...5,5 pressure **B20** 

```
Overflow quantity at overflow valve:
1st speed
              1/min: 500
Oveflow
                    : 41...83
            cm3/10s: (26...98)
 quantity
2nd speed
              1/min: 1400
Overflow
                    : 55...138
 quantity cm3/10s: (40...153)
Delivery-quant. and breakaway char.:
1st speed
              1/min: 1580
Del.quantity cm3/: 0.0...2,0
1000H.: -
2nd speed
              1/min: 1530
              cm3/: 0,0...15,0
Del.quantity
             1000H.: -
3rd speed
              1/min: 1490
Del.quantity cm3/: 0,0...15,0
1000H.: -
4th speed
              1/min: 1450
Del.quantity cm3/: -
1000H.: (36,0...44,0)
5th speed
              1/min: 1400
Del.quantity cm3/: 55,0...58,0)
óth speed
              1/min: 1100
Del.quantity cm3/: -
1000H.: (54,0...60,0)
              1/min: 850
7th speed
             cm3/: 52,5...56,5
1000H.: (51,5...57,5)
Del.quantity
8th speed 1/min: 500
Del.quantity cm3/: 39.0...47.0
              1000H: (38,0...48,0)
Zero delivery (stop):
Mech. shutoff:
Speed
Del.quantity cm3/: -
Speed
              1/min: 375
Idle delivery:
Mfg. date: until
              1/min: 375
1st speed
Del.quantity cm3/: -
             1000H.: (7,0...15,0)
2nd speed
              1/min: 450
Del.quantity cm3/: 0,0...4,0
1000H.: -
Automatic starting fuel delivery:
1st speed
              1/min: 130
Del.quantity cm3/: -
              1000H: 60,0
ind.
2nd speed
              1/min: 400
```

**B21** 

Del.quantity cm3/: -1000H: 60,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 : 12,0 Rated voltage

Mounting and assembly dimensions:

Designation

mm KF 5,1...5,4 mm : 1,4..1,65 : 1,2 MS mm SVS max. mm : 18,8...20,8 XK mm XL : 9,6...13,0

mm

Note inst. in remarks column

Test sheet : MAN 5,6 I1 Edition : 30.05.87

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R120-5 Type number : 0 460 426 074

Customer-specific information

Customer

: D 0226 MTXE/51 Engine

#### TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

With thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly " : 1 688 901 000

Opening -

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke

e mm : 0,2 (from BDC): +-0,02(0,04)

Indicator setting: Piston stroke mm: 1 Outlet : A

Injection-pump setting values Test specifications in parentheses

#### Timing-device travel:

Speed 1/min: 700 Charge press. hPa: 1000 Setting value mm: 2,5...2,9

# Supply-pump pressure:

Speed 1/min: 700

```
Charge press. hPa: 1000
Setting value bar: 4,5...5,1
                                                                Supply-pump pressure characteristic:
Full-load del. with charge press.:
                                                                1st speed
                                                                                 1/min: 500
                                                                Charge press. hPa: 1000
                 1/min: 700
Speed
                                                                Supply-pump
                                                                                 bar: 3.6...4,2
1/min: 900
Charge press. hPa: 1000
                                                                 pressure
Del.quantity cm3/
1000H.: 93,5...94,5
                                                                2nd speed
                                                                Charge press. hPa: 1000
                cm3/: 4,0
1000H: (4,5)
Dispersion
                                                                Supply-pump
                                                                 pressure
                                                                                 bar: 5,4...6,0
1/min: 1100
                                                                3rd speed
Full-load del. w/out charge press.:
                                                                Charge press. hPa: 1000
                                                                Supply-pump
Speed
                1/min : 500
                                                                 pressure
                                                                                    bar: 6,3...6,9
Del.quantity cm3/
                1000H.: 79,0...80,0
                                                                Overflow quantity at overflow valve:
Low-idle speed regulation:
                                                                                 1/min: 500
                                                                1st speed
                                                                Charge press. hPa: -
Speed
Speed
Del.quantity cm3/
1000H.: 41.0...47.0
Dispersion cm3/: 3.5
                 1/min: 300
                                                                Oveflow'
                                                                quantity cm3/10s: (26...98)
2nd speed 1/min: 1100
                                                                Charge press. hPa: -
Overflow : 5
                1000H.: (4.5)
                                                                                       : 55...138
Full-load speed regulation:
                                                                 quantity cm3/10s: (40...153)
Speed
                 1/min: 1180
                                                                Delivery-quant. and break away char.:
Charge press. hPa: 1000
                                                                1st speed 1/min: 600
Del.quantity cm3/
                                                                Charge-air pressure-setting
                 1000H: 64,0...70,0
                                                                 point
                                                                                   hPa: 175
                                                                LDA stroke mm: 5,7
Del.quantity cm3/: 90,5...91,5
1000H.: (88,0...94,0)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Del.quantity cm3/: 0,0...1,5
1000H.: -
Start:
                 1/min: 100
Speed
Del.quantity
       cm3/1000H.: 80.0
mind '
Inspection-pump test specifications
                                                                                 1/min: 1260
                                                                3rd speed
Test specifications in parentheses
                                                                Charge press. hPa: 1000
                                                                Del.quantity cm3/: 0.0...15.0
1000H.: -
                                                                4th speed 1/min: 1220
Charge press. hPa: 1000
Del.quantity cm3/: 0,0...15,0
1000H.: -
Timing-device characteristic:
1st speed
                 1/min: 500
Charge press. hPa: 1000
TD travel mm: 0,2...1,0
                                                                5th speed
                                                                                 1/min: 1180
                                                                Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: (62,0...72,0)
6th speed 1/min: 1100
                     mm: (0,0...1,3)
2nd speed
                 1/min: 700
Charge press. hPa: 1000
10 travel
                     mm:
                                                                Charge press. hPa: 1000
Del.quantity cm3/: 92,5...95,5
1000H.: (91,0...97,0)
7th speed 1/min: 900
                     mm: (2,0...3,4)
3rd speed
                 1/min:
                          900
Charge press. hPa: 1000
                     mm: 3,8...4,6
mm: (3,5...4,9)
TD travel
                                                                Charge press. hPa: 1000
Del.quantity cm3/: 95.0...99.0
1000H.: (94.0...100.0)
8th speed 1/min: 700
4th speed
                1/min: 1100
Charge press. hPa: 1000
TD travel
                     mm: 4,5...5,3
                     mm: (4,2...5,6)
                                                                Charge press. hPa: 1000
```

```
Del.quantity cm3/: -
              1000H: (91,0...97,0)
              1/min: 500
9th speed
Charge press.
               hPa: 1000
              cm3/: 90,0...94,0
Deliquantity
              1000H: (88,3...95,7)
              1/min: 500
10th speed
Charge press. hPa:
Del.quantity cm3/: 79,0...80,0
              1000H: (76,5...82,5)
Zero delivery (stop):
Mech. shutoff:
Speed
Speed
Deliquantity cms/: --
1000H.: --
             1/min: 1100
Idle delivery:
Mfg. date: until
             1/min: 300
1st speed
Del.quantity cm3/: -
            1000H.: (39,0..49,0)
2nd speed
             1/min: 450
Del.quantity cm3/: 0,0...3,0
1000H.: -
Automatic starting fuel delivery:
1st speed
             1/min: 320
Del.quantity cm3/: -
             1000H: 90,0
 ind.
2nd speed
              1/min: 440
Del.quantity cm3/: -
              1000H: 90,0
 ax.
Shutoff electromagnet:
Cut-in
min. voltage
                   : 10,0
Rated voltage
                   : 12,0
Mounting and assembly dimensions:
Designation
               mm
KF
                   : 5,7...6,0
               mm
MS
                  : 1,0..1,25
              mm
SVS max.
                  : 2,5
              mm
Remarks:
Correction at adjusting nut (46)
```

```
BOSCH-INJ.-PUMP TEST SPECIFICATIONS
                                                  Supply-pump pressure:
Note inst. in remarks column
                                                                1/min: 750
                                                  Speed
                                                  Setting value bar: 3,5...4,1
                  : CUM 5,9 U1
Test sheet
Edition
                  : 07.07.87
                                                  Full-load del. W/out charge press.:
replaces
                  : IS04113
Calibrating oil
                                                               1/min: 750
                                                  Speed
                                                  Del.quantity cm3/
1000H.: 64.5...65,5
Dispersion cm3/: 4,0
                  : VE 6/12F1100 R225-9
Injection pump
                  : 0 460 426 075
Type number
Customer Part-No.: 390 8206
                                                               1000H.: (4.5)
Customer-specific information
                                                  Low-idle speed regulation:
Customer
                  : CUMMINS
                                                  Speed
                                                                1/min: 375
Engine
                  : 6BT-590 IND.
                                                  Del.quantity cm3/
                                                               1000H.: 8,0...14,0
TEST BENCH REQUIREMENTS
                                                  Dispersion
                                                                 cm3/: -
                                                               1000H.: 5,5
Calibrating-oil oc
                                                  Full-load speed regulation:
return temp.
with thermometer : 40...48
                                                                1/min: 1100
                                                  Speed
                  : 42...50
electronically
                                                  Deliquantity cm3/
                                                                1000H: 46,0...52,0
Inlet press., bar : 0,35
                                                  Start:
Calibrating nozzle-holder
 assembly
                  : 1 688 901 027
                                                  Speed
                                                                1/min: 100
                                                  Del.quantity
                                                        cm3/1000H .: 70,0
Opening
                                                  mind
              bar : 250...253
 pressure
                                                  Inspection-pump test specifications
Perforated-plate
                                                  Test specifications in parentheses
 diemeter
              mm : 0.5
                                                  Timing-device characteristic:
Test inj. tubing : 1 680 750 017
                                                                1/min: 500
                                                  1st speed
                                                                   mm: 1,5...2,3
Outside diameter
                                                  TD travel
x Wall thickness : 2
                                                                   mm: (1,2...2,6)
               mm : 840
x Length
                                                  2nd speed
                                                                1/min: 750
                                                  TD travel
                                                                   mm:
Start of delivery
                                                                mm: (2,9...4,3)
1/min: 1050
                                                  3rd speed
             mm : 0,3
Prestroke
        (from BDC): +-0.02(0.04)
                                                  TD travel
                                                                   mm: 5,0...5,8
                                                                   mm: (4,7...6,1)
Start of delivery block
                mm: 1,5
Piston stroke
                                                  Supply-pump pressure characteristic:
                mm: +-0.02(0.06)
Outlet
                                                                1/min: 500
                                                  1st speed
                                                  Supply-pump
                                                                  bar: 2,4...3,0
Injection-pump setting values
                                                   pressure
Test specifications in parentheses
                                                  2nd speed
                                                                1/min: 1050
                                                  Supply-pump
Timing-device travel:
                                                                  bar: 4,6...5,2
                                                   pressure
            1/min: 750
                                                  Overflow quantity at overflow valve:
Setting value mm: 3,4...3,8
```

825

......

```
1st speed 1/min: 500
Oveflow
                    : 41...83
            cm3/10s: (26...98)
 quanti ty
2nd speed
            1/min: 1050
Overflow
                    : 55...138
 quantity cm3/10s: (40...153)
Delivery-quant. and breakaway char.:
1st speed 1/min: 1250
Del.quantity cm3/: 0.0...2,0
1000H.: -
2nd speed
               1/min: 1160
Del.quantity cm3/: 0,0...15,0
1000H.: -
3rd speed
               1/min: 1130
Del.quantity cm3/: 0.0...15,0
1000H.: -
4th speed
               1/min: 1100
Del.quantity cm3/: -
1000H.: (44.0...54.0)
5th speed
               1/min: 1050
Del.quantity cm3/: 60,5...63,5
1000H:: (59,0...65,0)
6th speed
               1/min: 900
Del.quantity cm3/: 62.0...65.0
1000H.: (60.5...66.5)
7th speed
               1/min. 750
Del.quantity cm3/: -
1000H.: (62,0...68,0)
               1/min: 500
8th speed
Del.quantity cm3/: 64,0...72,0
1000H: (63,0...73,0)
Zero delivery (stop):
Electr. shutoff:
               1/min: 375
Speed
ELAB
                volt: -
Del.quantity cm3/: -
             1000H.: -
max.
Idle delivery:
Mfg. date: until : -
            1/min: 375
1st speed
Del.quantity cm3/: -
              1000H.: (6,0...16,0)
              1/min: 500
2nd speed
Del.quantity cm3/: 0,0...4,0
1000H.: -
Automatic starting fuel delivery:
1st speed
               1/min: 130
Del.quantity cm3/: -
               1000H: 70,0
 ind.
2nd speed
               1/min: 350
Deliquantity cm3/: -
               1000H: 70,0
 ax.
```

**B26** 

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : -

KF mm : 5,1...5,4 MS mm : 1,3..1,55

SVS max. mm : 2,6

Note inst. in remarks column

Test sheet : CUM 5.9 U Edition : 07.07.87

replaces

Calibrating oil : ISO4113

Injection pump : VE 6/12F1100 R225-9 Type number : 0 460 426 075

Customer Part-No.: 390 8208

Customer-specific information : CUMMINS Customer

: 6BT-590 1ND. Engine

#### TEST BENCH REQUIREMENTS

Calibrating-oil oc return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,55

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

pressure bar : 250...253

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0,02(0,04)

Start of delivery block Piston stroke mm: 1,5

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750

Setting value mm: 3,4...3,8

!	1st speed 1/min: 500
Supply-pump pressure:	l Oveflow : 4183
1	quantity cm3/10s: (2698)
Speed 1/min: 750	l 2nd speed 1/min: 1050 l Overflow : 55138
Setting value bar: 3,54,1	1 Overflow : 55138
	quantity cm3/10s: (40153)
Full-load del. w/out charge press.:	
750	Delivery-quant, and breakaway char.:
Speed 1/min : 750	1 1st speed 1/min: 1250
Del.quantity cm3/	Del.quantity cm3/: 0,02,0
1000H.: 64,565,5	
Dispersion cm3/: 4.0	2nd speed 1/min: 1160
1000H.: (4,5)	Del.quantity_cm3/: 0,015,0
lauridle coord population	1000H.: -
Low-idle speed regulation:	3rd speed 1/min: 1130
Sound 1/min: 375	Del.quantity cm3/: 0,015,0
Speed 1/min: 375	1 4th speed 1/min: 1100
Del.quentity cm3/ 1000H.: 8,014,0	1 Del cuantity cm2/: -
Dispersion cm3/: -	Del.quantity cm3/: -
1000H.: 5,5	1 1000H.: (44,054,0) 1 5th speed 1/min: 1050
Full-load speed regulation:	Del.quantity cm3/: 60,563,5
The state of the s	10004.: (59,065,0)
Speed 1/min: 1100	6th speed 1/min: 900
Del.quantity cm3/	
1000H: 46,052,0	Del.quantity cm3/: 62.065.0 1 1000H.: (60.566.5)
	7th speed 1/min: 750
Stert:	Delequantity cm3/: -
	1 1000H.: (62,068,0)
Speed	8th speed 1/min: 500
Del.quantity : -	<pre>1 Del.quantity cm3/: 64.072.0</pre>
mind cm3/1000H.: 70,0	1000H: (63,073,0)
Incomption water wash association to	
Inspection-pump test specifications	Zero delivery (stop):
Test specifications in parentheses	i I Flagte shutoff:
	l Electr. shutoff: l Speed 1/min: 375
Timing-device characteristic:	I Speed 1/min: 375 I ELAB volt: -
THEIR METTER CHAINCE COLORS	Del.quantity cm3/: -
1st speed 1/min: 500	1 max, 1000H.: -
TD travel mm: 1,52,3	
mm: (1,22,6)	Idle delivery:
2nd speed 1/min: 750	
TD travel mm: -	! Mfg. date: until : -
infn: (2,94,3)	1 1st speed 1/min: 375
3rd speed 1/min: 1050	Del.guantity cm3/: -
TD travel mm: 5,05,8	1000H.: (6,016,0)
mm: $(4,76,1)$	I 2nd speed 1/min: 500
	Del.quantity cm3/: 0,04,0
Supply-pump pressure characteristic:	1000н.: -
46.50	
1st speed 1/min: 500	! Automatic starting fuel delivery:
Supply-pump	4.6 10 4.70
pressure bar: 2,43,0	1 1st speed 1/min: 130
2nd speed 1/min: 1050	Del.quantity cm3/: -
Supply-pump	ind. 1900H: 70,0
pressure bar: 4,65,2	I I 2nd speed 1/min: 350
Overflow quantity at overflow valve:	I
Total risk qualities be over item valve.	I ax. 1000H: 70,0
1	100011. 10,0

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet : CUM 5,9 U4 Edition replaces : 08.07.87 Calibrating oil : ISO 4113 Injection pump : VE 6/12F1100 R225-13 Type number : 0 460 426 082 Customer Part-No. : 390 8200 Customer-specific information Customer : CUMMINS Engine : 6 BT-5,9IND TEST BENCH REQUIREMENTS Calibrating-oil return temp. °C with thermometer : 40...48 electronically : 42...50 Inlet press., bar: 0,35 Calibrating nozzle-holder assembly : 1 688 901 027 Opening bar : 250...253 pressure Perforated-plate diameter mm: 0.5 Test inj. tubing : 1 680 750 017 Outside diameter : 6 x Wall thickness : 2 x Length mm: 840 Start of delivery Prestroke mm : 0,3 (from BDC): +-0.02(0.04)Start of delivery block mm: 1,5 Piston stroke mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed

Setting value mm: 4,3...4,7

```
1/min: 500
                                                      1st speed
                                                      Oveflow
                                                                          : 41...83
Supply-pump pressure:
                                                                  cm3/10s: (26...98)
1/min: 1100
                                                       quantity
Speed 1/min: 750
Setting value bar: 3,7...4,3
                                                      2nd speed
                                                      Over flow
                                                                          : 55...138
                                                       quantity cm3/10s: (40...153)
Full-load del. w/out charge press.:
                                                      Delivery-quant. and breakaway char.:
             1/min : 750
                                                      1st speed
                                                                    1/min: 1250
Speed
Deliquantity cm3/
                                                      Del.quantity cm3/: 0,0...2,0
             1000H.: 76,5...77,5 cm3/: 4,0
                                                                    1000H.:
                                                      2nd speed 1/min: 1210
Del.quantity cm3/: 0,0...15,0
1000H.: -
Dispersion
             1000H.: (4,5)
                                                                     1/min: 1170
Low-idle speed regulation:
                                                      3rd speed
                                                      Del.quantity cm3/: 0,0...15,0
1000H.: -
Speed
              1/min: 375
Del.quantity
               cm3/
                                                      4th speed
                                                                     1/min: 1150
                                                      Del.quantity cm3/: -
1000H.: (47,5...57,5)
             1000H.: 8,0...14,0
               cm3/: -
Dispersion
             1000H.: 5,5
                                                                     1/min: 1100
                                                      5th speed
                                                      Del.quantity cm3/: 67,5...70,5
1000H.: (66,0...72,0)
Full-load speed regulation:
              1/min: 1150
                                                                     1/min: 900
Speed
                                                      6th speed
                                                      Del.quantity cm3/: 72,5...75,5
1000H.: (71,0...77,0)
7th speed 1/min: 750
Del quantity
              cm3/
              1000H: 49,5...55,5
                                                      Start:
Speed
              1/min: 100
                                                      Del.quantity cm3/: 61,0...69,0
Del.quantity
        cm3/1000H.: 70,0
                                                                     1000H: (60,0...70,0)
mind
                                                      Zero delivery (stop):
Inspection-pump test specifications
Test specifications in parentheses
                                                      Electr. shutoff:
                                                                    1/min: 375
                                                      Speed
                                                      ELAB
                                                                     volt: -
Timing-device characteristic:
                                                      Del.quantity cm3/: - max. 1000H.: -
              1/min: 500
1st speed
                 mm: 2,1...2,9
mm: (1,8...3,2)
TD travel
                                                      Idle delivery:
              1/min: 750
2nd speed
                                                      Mfg. date: until : -
TD travel
                 mm:
                                                                    1/min: 375
                 mm: (3,8...5)
                                                      1st speed
3rd speed
              1/min: 1100
                                                      Del.quantity cm3/: -
                                                                   1000H.: (6,0...16,0)
TD travel
                 mm: 5,8...6,6
                 mm: (5, 5, ..., 6, 9)
                                                                    1/min: 450
                                                      2nd speed
                                                      Del.quantity cm3/: 0,0...4,0
1000H.: -
Supply-pump pressure characteristic:
              1/min: 500
                                                      Automatic starting fuel delivery:
1st speed
Supply-pump
                                                                    1/min: 130
pressure
                bar: 2,6...3,2
                                                      1st speed
2nd speed
              1/min: 1100
                                                      Del.quantity
                                                                     cm3/: -
Supply-pump
                                                                     1000H: 85,0
                                                       ind.
                bar: 5,1...5,7
pressure
                                                                    1/min: 240
                                                      2nd speed
Overflow quantity at overflow valve:
                                                      Del.quantity cm3/: -
                                                                    1000H: 85,0
```

C03

```
Shutoff electromagnet:
```

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation K KF MS mm : mm : 5,1...5,4
mm : 0,9..1,15
mm : 1,2
mm : 20,2...22,2
mm : 10,5...13,9 SVS max.

XK XL

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet : CUM 5.9 U6 Edition : 08.07.87 replaces : -Calibrating oil : ISO 4113 Injection pump : VE 6/12F1100 R225-13 Type number : 0 460 426 082 Customer Part-No.: 390 8201 Customer-specific information : CUMMINS Customer Engine : 6 BT-590IND Power k: 105 1/mi: 2100 Speed TEST BENCH REQUIREMENTS Calibrating-oil return temp. °C with thermometer : 40...48 electronically : 42...50 Inlet press., bar: 0,35 Calibrating nozzle-holder : 1 688 901 027 assembly Opening | bar : 250...253 pressure Perforated-plate diameter mm: 0.5 Test inj. tubing : 1 680 750 017 Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,5

mm: +-0.02(0.06)

Outlet : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

```
Speed
              1/min: 750
                                                        Overflow quantity at overflow valve:
Setting value mm: 3,4...3,8
                                                                       1/min: 500
                                                        1st speed
                                                        Oveflow
                                                                             : 41...83
Supply-pump pressure:
                                                                     cm3/10s: (26...98)
1/min: 1050
                                                         quantity
               1/min: 750
                                                        2nd speed
Speed
Setting value bar: 3,4...3,8
                                                        Over flow
                                                                            : 55...138
                                                         quantity cm3/10s: (40...153)
Full-load del. W/out charge press.:
                                                        Delivery-quant. and breakaway char.:
                                                                      1/min: 1200
Speed
              1/min : 750
                                                        1st speed
                                                        Del.quantity cm3/: 0,0...3,0 1000H.: -
Del.quantity cm3/
              1000H.: 74,5...75,5
                cm3/: 4,0
Dispersion
                                                                       1/min: 1170
                                                        2nd speed
                                                        Del.quantity cm3/: 0,0...15,0
1000H.: -
              1000H.: (4,5)
                                                                       1/min: 1130
Low-idle speed regulation:
                                                        3rd speed
                                                        Del.quantity cm3/: 0,0...15,0
1000H.: -
Speed
               1/min: 375
Del.quantity
                                                                       1/min: 1100
               cm3/
                                                        4th speed
                                                        1000H.: (50,0...60,0)
Sth speed 1/min: 1050
              1000H.: 8,0...14,0
Dispersion
                cm3/: ·
              1000H.: 5,5
                                                        Del.quantity cm3/: 68,5...71,5
1000H.: (67,0...73,0)
Full-load speed regulation:
                                                                       1/min: 900
Speed
               1/min: 1100
                                                        6th speed
                                                        Del.quantity cm3/: 72,0...75,0
1000H.: (70,5...76,5)
Del.quantity cm3/
               1000H: 52,0...58,0
                                                        7th speed 1/min. ...
Del.quantity cm3/: -
1000H.: (72,0...78,0)
Ath speed 1/min: 500
7/: 57 0...65,0
                                                                       1/min: 750
Start:
               1/min: 100
Speed
                                                        Del.quantity cm3/: 57,0...65,0
Del.quantity
        cm3/1000H.: 70.0
                                                                       1000H: (56,0...66,0)
mind
Inspection-pump test specifications
                                                        Zero delivery (stop):
Test specifications in parentheses
                                                        Electr. shutoff:
                                                                       1/min: 375
                                                        Speed
                                                        ELAB
                                                                        volt:
Timing-device characteristic:
                                                        Del.quantity cm3/: - max. 1000H.: -
               1/min: 500
1st speed
TD travel
                  mm: 1,4...2,2
                  mm: (1,1...2,5)
                                                        Idle delivery:
2nd speed
               1/min: 750
TD travel
                  mm:
                                                        Mfg. date: until :
                  mm: (2,9...4,3)
iin: 1050
                                                                       1/min: 375
                                                        1st speed
                                                        Del.quantity cm3/: -
1000H.: (6,0...16,0)
3rd speed
               1/min:
TD travel
                  mm: 4,6...5,4
mm: (4,3...5,7)
                                                                       1/min: 450
                                                        2nd speed
                                                        Del.quantity cm3/: 0,0...4,0
1000H.: -
Supply-pump pressure characteristic:
               1/min: 500
1st speed
                                                        Automatic starting fuel delivery:
Supply-pump
                 bar: 2,6...3,2
pressure
                                                        1st speed
                                                                       1/min: 150
               1/min: 1050
                                                        Del.quantity cm3/:
2nd speed
                                                                       1000H: 80<sub>2</sub>0
Supply-pump
                                                         ind.
                 bar: 4,9...5,5
pressure
```

C06

2nd speed 1/min: 250
Del.quantity cm3/: ax. 1000H: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K
mm : KF
mm : 5,1...5,4

KF mm : 5,1...5,4
MS mm : 0,9..1,15
SVS max. mm : 2,0
XK mm : 20,2...22,2
XL mm : 10,5...13,9

Note inst. in remarks column

Test sheet : CUM 5.9 U3 Edition replaces : 08.07.87

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R225-13 Type number : 0 460 426 082

Customer Part-No.: 391 0251

Customer-specific information Customer : CUMMINS

: 6 BT-5,9IND Engine

#### TEST BENCH REQUIREMENTS

Calibrating-oil oc return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder : 1 688 901 027 assembly

Opening

bar : 250...253 pressure

Perforated-plate

diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block mm: 1,5 Piston stroke

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750 Setting value mm: 4,3...4,7

1	1st speed 1/min: 500
Supply-pump pressure:	Oveflow : 4183
off of part product	quantity cm3/10s: (2698)
Speed 1/min: 750	2nd speed 1/min: 1100
Setting value bar: 3,74,3	Overflow : 55138
	quantity cm3/10s: (40153)
Full-load del. W/out charge press.:	
	Delivery-quant. and breakaway char.:
Speed 1/min: 750	1st speed 1/min: 1250
Del.quantity cm3/	Del.quantity cm3/: 0,02,0 1000H.: -
1000H.: 76,577,5   Dispersion cm3/: 4,0	2nd coord 1/min: 1210
Dispersion cm3/: 4,0	2nd speed 1/min: 1210
100011.1 (4,5)	Del.quantity cm3/: 0,015,0 1000H.: -
Low-idle speed regulation:	3rd speed 1/min: 1170
Community   Comm	Del.quantity cm3/: 0,015,0
Speed 1/min: 375	1000H.: -
Deliquantity cm3/	4th speed 1/min: 1150
1000H.: 8,014,0	Del.quantity cm3/: -
Dispersion cm3/: -	1000H.: (47,557,5)
1000H.: 5,5	5th speed 1/min: 1100
Full-load speed regulation:	Del.quantity cm3/: 67,570,5
Speed 1/min: 1150	1000H.: (66,072,0) 6th speed  1/min: 900
Del.quantity cm3/	6th speed 1/min: 900
1000H: 49,555,5	Del.quantity cm3/: 72,575,5 1000H.: (71,077,0)
, , , , , , , , , , , , , , , , , , , ,	7th speed 1/min: 750
Start:	Del.quantity cm3/: -
	1000H.: (74,080,0)
Speed 1/min: 100	8th speed 1/min: 500
Deliquantity : -	Del.quantity cm3/: 61,069,0
mind cm3/1000H.: 70,0	1000H: (60,070,0)
Increation of the test consistings	Zana daliyany (stan):
Inspection-pump test specifications  Test specifications in parentheses	Zero delivery (stop):
rest specifications in parentneses	Electr. shutoff:
	Speed 1/min: 375
Timing-device characteristic:	ELAB volt: -
	Del.quantity cm3/: -
1st speed 1/min: 500	max. 1000H.: -
TD travel mm: 2,12,9	
mm: (1,83,2)	Idle delivery:
2nd speed 1/min: 750	Mfo doto, intil
TD travel mm: -	Mfg. date: until : - 1st speed
3rd speed 1/min: 1100	Del.quantity cm3/: -
TD travel mm: 5,86,6	1000H.: (6,016,0)
mm: (5,56,9)	2nd speed 1/min: 450
	Del.quantity cm3/: 0,04,0
Supply-pump pressure characteristic:	1000H.: -
4	A. A A. S A. a. A. S
1st speed 1/min: 500	Automatic starting fuel delivery:
Supply-pump has: 2.6. 3.2	1st speed 1/min: 130
pressure bar: 2,63,2	1st speed
Supply-pump	ind. 1000H: 85,0
pressure bar: 5,15,7	
1	2nd speed 1/min: 240
Overflow quantity at overflow valve:	Del.quantity cm3/: -
1	ax. 1000H: 85,0
C09	

```
Shutoff electromagnet:
```

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

# Designation

Note inst. in remarks column

Test sheet : CUM 5.9 U5 Edition : 08.07.87 replaces : -

replaces : -Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R225-13

Type number : 0 460 426 082 Customer Part-No.: 391 0252

Customer-specific information Customer : CUMMINS

Engine : 6 BT-590IND

Power k: 105 Speed 1/mi: 2100

#### TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

pressure bar: 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block
Piston stroke mm: 1,5
mm: +-0,02(0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

```
Overflow quantity at overflow valve:
             1/min: 750
Speed
Setting value mm: 3,4...3,8
                                                     1st speed
                                                                   1/min: 500
                                                     Oveflow
Supply-pump pressure:
                                                                        : 41...83
                                                                cm3/10s: (25...98)
                                                      quantity
                                                                   1/min: 1050
Speed
              1/min: 750
                                                     2nd speed
Setting value bar: 3,4...3,8
                                                                          55...138
                                                     Over flow
                                                      quantity cm3/10s: (40...153)
Full-load del. w/out charge press.:
                                                     Delivery-quant. and breakaway char.:
             1/min : 750
                                                     1st speed
                                                                  1/min: 1200
Del.quantity cm3/
                                                     Del.quantity cm3/: 0,0...3,0
                                                                  1000H.:
             1000H.: 74,5...75,5
Dispersion
               cm3/: 4,0
                                                                   1/min: 1170
                                                     2nd speed
                                                                  cm3/: 0,0...15,0
             1000H.: (4,5)
                                                     Del.quantity
                                                                  1000H.:
Low-idle speed regulation:
                                                                   1/min: 1130
                                                     3rd speed
                                                     Del.quantity cm3/: 0,0...15,0
                                                                  1000H.: -
              1/min: 375
Speed
Del.quantity
               cm3/
                                                     4th speed
                                                                   1/min: 1100
             1000H.: 8,0...14,0
                                                     Del.quantity
                                                                  cm3/: -
                                                                 1000H.: (50,0...60,0)
Dispersion
               cm3/:
             1000H.: 5,5
                                                                   1/min: 1050
                                                     5th speed
                                                                 cm3/: 68,5...71,5
1000H.: (67,0...73,0)
Full-load speed regulation:
                                                     Del.quantity
              1/min: 1100
                                                                   1/min: 900
Speed
                                                     6th speed
                                                    Del.quantity cm3/: 72.0...75.0
1000H.: (70,5...76,5)
Del.quantity cm3/
              1000H: 52,0...58,0
                                                                   1/min: 750
                                                     7th speed
                                                                   cm3/:
Start:
                                                     Del.quantity
                                                                 1000H.: (72,0...78,0)
                                                    8th speed 1/min: 500
Del.quantity cm3/: 57,0...65,0
              1/min: 100
Speed
Del.quantity
                                                                  1000H: (56,0...66,0)
mind
        cm3/1000H.: 70,0
Inspection-pump test specifications
                                                    Zero delivery (stop):
Test specifications in parentheses
                                                    Electr. shutoff:
                                                                   1/min: 375
                                                     Speed
                                                    ELAB
                                                                   volt: -
Timing-device characteristic:
                                                    Del.quantity cm3/: -
                                                                  1000H.:
              1/min: 500
                                                    max.
1st speed
TD travel
                 mm: 1,4...2,2
                 mm: (1,1...2,5)
                                                     Idle delivery:
              1/min: 750
2nd speed
TD travel
                 mm:
                                                    Mfg. date: until : "
              mm: (2,9...4,3)
1/min: 1050
                                                     1st speed
                                                                  1/min: 375
3rd speed
                                                    Del.quantity
                                                                  cm3/: -
                                                                 1000H.: (6,0...16,0)
                 mm: 4,6...5,4
mm: (4,3...5,7)
TD travel
                                                                  1/min: 450
                                                    2nd speed
                                                    Del.quantity cm3/: 0,0...4,0
                                                                 1000H.: -
Supply-pump pressure characteristic:
              1/min: 500
                                                    Automatic starting fuel delivery:
1st speed
Supply-pump
              bar: 2,6...3,2
1/min: 1050
 pressure
                                                     1st speed
                                                                  1/min: 150
                                                    Del.quantity
2nd speed
                                                                   cm3/: -
                                                                   1000H: 80,0
Supply-pump
                                                      ind.
                bar: 4,9...5,5
pressure
C12
```

2nd speed 1/min: 250 Del.quantity cm3/: ax. 1000H: 80,0

## Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

## Mounting and assembly dimensions:

Designation

KF mm : 5,1...5,4
MS mm : 0,9.1,15
SVS max. mm : 2,0
XK mm : 20,2...22,2
XL mm : 10,5...13,9

Note inst. in remarks column

Test sheet : PER 6.0 D Edition : 20.07.87

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1300 R240 Type number : 0 460 426 084

Customer-specific information Customer : PERKINS

Engine : T6 60 CC

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 020

Opening

pressure bar : 172...175

Perforated-plate

diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,25

(from BDC): +-0.02(0.04)

Indicator setting:

Piston stroke mm: 1.0 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200 Charge press. hPa: 1000

Setting value mm: 1,8...2,2

mm: 2,0...2,8 mm: (1,7...3,1) Supply-pump pressure: TD travel Speed 1/min: 1200 Charge press. hPa: 1000 Supply-pump pressure characteristic: Setting value bar: 6,9...7,5 1st speed 1/min: 500 Full-load del. with charge press.: hPa: 1000 Charge press. Supply-pump bar: 3,9...4,5 1/min: 1300 1/min: 700 Speed pressure Charge press. hPa: 1000 2nd speed Del.quantity cm3/ 1000H.: 96.0...97.0 Dispersion cm3/: 5.0 hPa: 1000 Charge press. Supply-pump bar: 7,3...7,9 pressure 1000H : (5,0) Overflow quantity at overflow valve: Full-load del. w/out charge press.: 1st speed 1/min: 500 1/min : 700 Speed Charge press. hPa: -Del.quantity cm3/ 1000H.: 87,0...88,0 Oveflow quantity cm3/10s: (26...98) nd speed 1/min: 1300 2nd speed Charge press. hPa: 1000 Low-idle speed regulation: Over flow : 55...138 1/min: 300 quantity cm3/10s: (40...153) Speed Charge press. hPa: -Del.quantity cm3/Delivery-quant. and breakaway char.: 1000H.: 16,5...20,5 1st speed 1/min: 700 cm3/: 5.0 1000H.: (5,0) Charge-air pressure-setting Dispersion point hPa: 450
Del.quantity cm3/: 93.0...94.0
1000H.: (90.5...96.5)
2nd speed 1/min: 1550 Full-load speed regulation: Speed 1/min: 1450 Charge press. hPa: 1000 Del.quantity cm3/: 0,0...2,6 1000H.: -Charge press. hPa: 1000 Del.quantity cm3/1000H: 47,0...53,0 1/min: 1500 3rd speed Charge press. hPa: 1000
Del.quantity cm3/: 16.0...24.0
1000H.: (13.0...27.0) Start: 1/min: 100 Speed 1/min: 1450 Del.quantity 4th speed cm3/1000H.: 120,0 Charge press. hPa: 1000 Deliquantity cm3/: -1000H.: (44,0...56,0) Inspection-pump test specifications 1/min: 1400 Test specifications in parentheses 5th speed Charge press. hPa: 1000 Del.quantity cm3/: 75.0...83.0 1000H.: (72.0...86.0) Timing-device characteristic: 1/min: 1300 6th speed Charge press. hPa: 1000 1/min: 1000 1st speed Del.quantity cm3/: 94.0...97.0 1000H.: (92.5...98.5) 7th speed 1/min: 1000 Charge press. hPa: 1000 TD travel mm: 0,3...1,1 mm: (0,0...1,4)Charge press. hPa: 1000
Del.quantity cm3/: 96.5...99.5
1000H.: (95.0...101.0)
8th speed 1/min: 700 KSB solenoid-operated valve volt: 1200 Timing valve volt: 1000 TD travel mm: mm: (1,3...2,7)Charge press. hPa: 1000 1/min: 1300 3rd speed Del.quantity cm3/: -1000H: (93,5...99,5) 1/min: 700 Charge press. hPa: 1000 9th speed

C15

```
Charge press. hPa: -
              cm3/: -
Del.quantity
              1000H: (84,5...100,5)
              1/min: 500
10th speed
Charge press. hPa:
Del.quantity cm3/: 80,0...83,0
              1000H: (78,5...84,5)
Zero delivery (stop):
Mech. shutoff:
Speed
              1/min: 1300
Del.quantity cm3/: 0..3
1000H.: -
Electr. shutoff:
Speed
              1/min: 300
ELAB
               volt: -
Del.quantity cm3/: 0,0...3,0 max. 1000H.: -
Idle delivery:
Mfg. date: until
                  . .
1st speed
             1/min: 300
Del.quantity cm3/: -
             1000H.: (13,5..23,5)
              1/min: 350
2nd speed
Del.quantity cm3/: 4,5...10,5
1000H.: (2,5...12,5)
              1/min: 400
3rd speed
Del.quantity cm3/: 0,0...3,0
1000H.: -
Automatic starting fuel delivery:
1st speed
              1/min: 150
Del.quantity cm3/: -
              1000H: 95,0
 ind.
              1/min: 230
2nd speed
Del.quantity
              cm3/: -
              1000H: 85,0
ax.
Shutoff electromagnet:
Cut-in
                   : 10,0
min. voltage
                   : 12,0
Rated voltage
Mounting and assembly dimensions:
Designation
               mm
KF
                  : K-0T
               mm
MS
                   : 0,7..0,95
               mm
                   : 3,2
SVS max.
               mm
Remarks:
```

C16

Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet : CUM 5,9 U/ Edition replaces : 08.07.87 Calibrating oil : ISO 4113 Injection pump : VE 6/12F1150 R173-5 Type number : 0 460 426 086 Customer Part-No. : 390 4545 Customer-specific information : CUMMINS Customer Engine : 6 BTA 590IND TEST BENCH REQUIREMENTS Calibrating-oil return temp. °C with thermometer : 40...48 electronically : 42...50 Inlet press., bar: 0,35 Calibrating nozzle-holder assembly : 1 688 901 027 Opening pressur€ bar : 250...253 Perforated-plate diameter mm: 0.5 Test inj. tubing : 1 680 750 017 Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3 (from BDC): +-0.02(0.04)

Start of delivery block mm: 1,85 Piston stroke mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Charge press. hPa: 1000

```
Setting value mm: 1,3...1,7
                                                              Charge press. hPa: 1000
                                                                                   mm: 2,2...3,0
mm: (1,9...3,3)
                                                              TD travel
Supply-pump pressure:
Speed
                1/min: 750
                                                              Supply-pump pressure characteristic:
Charge press. hPa: 1000
Setting value bar: 3,3...3,9
                                                                               1/min: 500
                                                               1st speed
                                                              Charge press. hPa: 1000
Full-load del. with charge press.:
                                                              Supply-pump
                                                                               bar: 2,3...2,9
1/min: 1100
                                                                pressure
Speed
                1/min: 750
                                                              2nd speed
                                                                                 hPa: 1000
Charge press. hPa: 1000
                                                              Charge press.
Del.quantity cm3/
1000H.: 82,5...83,5
                                                              Supply-pump
                                                                pressure
                                                                                 bar: 4,7...5,3
Dispersion
               cm3/:4.0
               1000H : (4,5)
                                                              Overflow quantity at overflow valve:
Full-load del. w/out charge press.:
                                                                               1/min: 500
                                                              1st speed
                                                              Charge press. hPa:
               1/min : 500
                                                              Oveflow
Speed
                                                              quantity cm3/10s: (26...98)
2nd speed 1/min: 1100
Charge press. hPa: 1000
Overflow : 55...138
Del.quantity cm3/
1000H.: 67,5...68,5
Low-idle speed regulation:
                                                                quantity cm3/10s: (40...153)
Speed
                1/min: 375
Charge press. hPa: -
                                                              Delivery-quant. and breakaway char.:
Del.quantity cm3/
1000H.: 8,0...14,0
                                                              1st speed
                                                                             1/min: 700
                                                              Charge-air pressure-setting point hPa: 400
Del.quantity cm3/: 77,5...78,5
1000H.: (75,0...81,0)
2nd speed 1/min: 1260
Dispersion
                  cm3/: -
               1000H.: 5,5
Full-load speed regulation:
                                                              Charge press. hPa: 1000
Del.quantity cm3/: 0,0...3,0
Speed
                1/min: 1150
Charge press. hPa: 1000
                                                                             1000H.: -
Del.quantity cm3/
                                                              3rd speed 1/min: 1240
Charge press. hPa: 1000
Del.quantity cm3/: 0,0...15,0
                1000H: 60,0...66,0
Start:
                                                                               1/min: 1200
               1/min: 100
                                                              4th speed
Speed
                                                              Charge press. hPa: 1000
Charge press. hPa: -
                                                              Del.quantity cm3/: 0,0...15,0
1000H.: -
Del.quantity
      cm3/1000H.: 70,0
mind '
                                                              5th speed 1/min: 1150
Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: (58,0...68,0)
Inspection-pump test specifications
Test specifications in parentheses
                                                                               1/min: 1100
                                                              6th speed
                                                              Charge press. hPa: 1000
Del.quantity cm3/: 78.0...81.0
1000H.: (76.5...82.5)
Timing-device characteristic:
                1/min: 600
1st speed
                                                                               1/min: 900
Charge press. hPa: 1000
                                                              7th speed
                                                              Charge press. hPa: 1000
Del.quantity cm3/: 79,5...82,5
1000H.: (78,0...84,0)
8th speed 1/min: 750
                    mm: 0,1...0,9
mm: (0,0...1,2)
TD travel
                1/min: 750
2nd speed
Charge press. hPa: 1000
                                                              Charge press. hPa: 1000
TD travel
                    mm: (0,8...2,2)
                                                              Del.quantity cm3/: -
3rd speed 1/min: 1100
                                                                               1000H: (80,0...86,0)
```

C18

```
9th speed
              1/min: 500
                hPa: 1000
Charge press.
Del.quantity
              cm3/: 79,0...87,0
              1000H: (78,0...88,0)
              1/min: 500
10th speed
Charge press. hPa:
Del.quantity cm3/: -
              1000H: (65,0...71,0)
Zero delivery (stop):
Electr. shutoff:
              1/min: 375
Speed
ELAB
               volt: -
Del.quantity cm3/: - max. 1000H.: -
Idle delivery:
Mfg. date: until
             1/min: 375
1st speed
Del.quantity cm3/: -
             1000H.: (6,0...16,0)
              1/min: 500
2nd speed
Del.quantity cm3/: 0,0...4,0
             1000H.:
Automatic starting fuel delivery:
1st speed
              1/min: 280
Charge press. hPa: -
              cm3/: -
Del.quantity
              1000H: 80,0
 ind.
              1/min: 380
2nd speed
Charge press. hPa:
Deliquantity cm3/: -
              1000H: 80,0
Shutoff electromagnet:
Cut-in
                   : 20,0
 min. voltage
Rated voltage
                   : 24,0
Mounting and assembly dimensions:
Designation
               mm
                  : 5,1...5,4
: 1,1..1,35
: 5,8
KF
               mm
MS
               mm
SVS max.
              mm
                   : 18,8...20,8
XK
              mm
XL
                  : 11,6...15,0
              mm
Remarks:
```

Note inst. in remarks column

Test sheet : CUM 5,9 U8 Edition replaces : 08.07.87

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1150 R173-5 Type number : 0 460 426 086 Customer Part-No. : 390 4727

Customer-specific information : CUMMINS Customer

Engine : 6 BTA 590IND

#### TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

pressure bar : 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0.02(0.04)

Start of delivery block Piston stroke mm: 1,85

mm: +-0,02(0,06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750 Charge press, hPa: 1000

```
Setting value mm: 1,3...1,7
                                                                              hPa: 1000
                                                            Charge press.
                                                                                mm: 2,2...3,0
mm: (1,9...3,3)
                                                            TD travel
Supply-pump pressure:
Speed 1/min: 750 Charge press. hPa: 1000
                                                            Supply-pump pressure characteristic:
Setting value bar: 3,3...3,9
                                                                            1/min: 500
                                                            1st speed
                                                            Charge press. hPa: 1000
Full-load del. with charge press.:
                                                            Supply-pump
                                                                            bar: 2,3...2,9
1/min: 1100
                                                             pressure
                                                            2nd speed
                1/min: 750
Speed
Charge press. hPa: 1000
                                                                              hPa: 1000
                                                            Charge press.
Del.quantity cm3/
1000H.: 82.5...83.5
Dispersion cm3/: 4.0
                                                            Supply-pump
                                                             pressure
                                                                              bar: 4,7...5,3
                                                            Overflow quantity at overflow valve:
               1000H : (4,5)
Full-load del. w/out charge press.:
                                                            1st speed
                                                                            1/min: 500
                                                            Charge press. hPa: -
              1/min : 500
                                                            Oveflow
Speed
Del.quantity cm3/
1000H.: 67,5...68,5
                                                            quantity cm3/10s: (26...98)
2nd speed 1/min: 1100
                                                            Charge press. hPa: 1000
Overflow : 55...
                                                                                 : 55...138
Low-idle speed regulation:
                                                             quantity cm3/10s: (40...153)
                1/min: 375
Speed
Charge press. hPa: -
                                                            Delivery-quant. and breakaway char.:
Del.quantity cm3/
1000H.: 8,0...14,0
                                                                           1/min: 700
                                                            1st speed
                                                            Charge-air pressure-setting
                                                            point hPa: 400
Del.quantity cm3/: 77,5...78,5
1000H.: (75,0...81,0)
                 cm3/:
Dispersion
              1000H.: 5,5
Full-load speed regulation:
                                                                            1/min: 1260
                                                            2nd speed
                                                            Charge press. hPa: 1000
Del.quantity cm3/: 0,0...3,0
1000H.: -
                1/min: 1150
Speed
Charge press. hPa: 1000
                cm3/
Del.quantity
                                                            3rd speed 1/min: 1240
Charge press. hPa: 1000
Del.quantity cm3/: 0,0...15,0
                1000H: 60,0...66,0
Start:
                                                                            1/min: 1200
               1/min: 100
                                                            4th speed
Speed
                                                            Charge press. hPa: 1000
Charge press. hPa: -
                                                            Del.quantity cm3/: 0.0...15.0
1000H.: -
Del.quantity
mind cm3/1000H.: 70,0
                                                            5th speed 1/min: 1150
Charge press. hPa: 1000
Inspection-pump test specifications
                                                            Del.quantity cm3/: -
1000H.: (58,0...68,0)
Test specifications in parentheses
                                                                            1/min: 1100
                                                            6th speed
                                                           Charge press. hPa: 1000
Del.quantity cm3/: 78.0...81.0
1000H.: (76.5...82.5)
Timing-device characteristic:
               1/min: 600
1st speed
                                                           7th speed 1/min: 900
Charge press. hPa: 1000
Del.quantity cm3/: 79,5...82,5
1000H.: (78,0...84,0)
8th speed 1/min: 750
Charge press. hPa: 1000
                   mm: 0,1...0,9
TD travel
                   mm: (0,0...1,2)
               1/min: 750
2nd speed
Charge press. hPa: 1000
                   mm: -
                                                            Charge press. hPa: 1000
TD travel
                                                            Del.quantity cm3/: -
                   mm: (0,8...2,2)
3rd speed 1/min: 1100
                                                                            1000H: (80,0...86,0)
```

```
9th speed 1/min: 500
Charge press. hPa: 1000
Del.quantity cm3/: 79,0...87,0
1000H: (78,0...88,0)
                1/min: 500
10th speed
Charge press. hPa: -
Deliquentity cm3/: -
                1000H: (65,0...71,0)
Zero delivery (stop):
Electr. shutoff:
Speed
                1/min: 375
ELAB
                 volt: -
Del.quantity cm3/: - max. 1000H.: -
Idle delivery:
Mfg. date: until
1st speed 1/mi
              1/min: 375
Del.quantity cm3/: -
1000H.: (6,0...16,0)
                1/min: 500
2nd speed
Del.quantity cm3/: 0,0...4,0
1000H.: -
Automatic starting fuel delivery:
1st speed
                1/min: 280
Charge press. hPa: -
Del.quantity cm3/: -
                1000H: 80,0
 ind.
                1/min: 380
2nd speed
Charge press. hPa: -
Del.quantity cm3/: -
                1000H: 80,0
Shutoff electromagnet:
Cut-in
 min. voltage
                      : 10,0
Rated voltage
                      : 12,0
Mounting and assembly dimensions:
Designation
                 mm
                     : 5,1...5,4
: 1,1..1,35
: 2,8
KF
MS
                 min
SVS max.
                 mm
                     : 18,8...20,8
XK
                 mm
XL
                      : 11,6...15,0
                 mr
Remarks:
```

getarinanna.

Note inst. in remarks column

Test sheet : CUM 5,9 \$7 Edition : 20.07.87 replaces : -

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R225-14 Type number : 0 460 426 092

Customer-specific information

Customer : CUMMINS

Engine : 6 BT-5.9

Power k: 96 Speed 1/mi: 2500

#### TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder assembly : 1 688 901 027

Opening |

bar : 250...253

pressure Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3 (from BDC): +-0,02(0,04)

Start of delivery block mm: 1,5 Piston stroke

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

```
1/min: 750
                                                        Overflow quantity at overflow valve:
Setting value mm: 3,4...3,8
                                                                       1/min: 500
                                                        1st speed
                                                                            : 41...83
Supply-pump pressure:
                                                        Oveflow
                                                                    cm3/10s: (26...98)
1/min: 1250
                                                         quantity
Speed
               1/min: 750
                                                        2nd speed
Setting value bar: 3,5...4,1
                                                        Over flow
                                                                             : 55...138
                                                         quantity cm3/10s: (40...153)
Full-load del. w/out charge press.:
                                                        Delivery-quant. and breakaway char.:
                                                                       1/min: 1450
Speed
              1/min : 1100
                                                        1st speed
                                                        Del.quantity cm3/: 0,0...3,0
1000H.: -
Deliquantity cm3/
              1000H.: 60,5...61,5
cm3/: 4,0
                                                        2nd speed 1/min: 1370
Del.quantity cm3/: 0,0...15,0
1000H.: -
Dispersion
              1000H.: (4,5)
Low-idle speed regulation:
                                                        3rd speed
                                                                       1/min: 1330
                                                        Del.quantity cm3/: 0,0...15,0
                                                                      1000H.:
Speed
               1/min: 375
Del.quantity
               cm3/
                                                                       1/min: 1300
                                                        4th speed
                                                        Del.quantity cm3/: -
1000H.: (42,0...52,0)
5th speed 1/min: 1250
              1000H.: 8,0...14,0
                cm3/: 5,5
Dispersion
              1000H.: -
                                                        Del.quantity cm3/: 57.8...60.8
1000H.: (56.3...62.3)
Full-load speed regulation:
                                                                       1/min: 1100
Speed
               1/min: 1300
                                                        6th speed
Deliquantity cm3/
                                                        Del.quantity cm3/: -
                                                        1000H.: (58,0...64,0)
7th speed 1/min: 750
Del.quantity cm3/: 58,5...62,5
1000H.: (56,8...64,2)
               1000H: 44,0...50,0
Start:
                                                                       1/min: 500
               1/min: 100
Speed
                                                        8th speed
Del.quantity
                                                        Del.quantity cm3/: 51,0...59,0
        cm3/1000H.: 60.0
                                                                       1000H: (50,0...60,0)
mind
Inspection-pump test specifications
                                                        Zero delivery (stop):
Test specifications in parentheses
                                                        Electr. shutoff:
                                                                       1/min: 375
                                                        Speed
                                                        ELAB
Timing-device characteristic:
                                                                        volt: -
                                                        Del.quantity cm3/: - max. 1000H.: -
1st speed
               1/min: 500
                                                        max.
TD travel
                  mm: 1,5...2,3
               mm: (1,2...2,6)
1/min: 750
                                                        Idle delivery:
2nd speed
TD travel
                                                        Mfg. date: until : -
                  mm:
                  mm: (2,9...4,3)
                                                                      1/min: 375
                                                        1st speed
               1/min: 1100
3rd speed
                                                        Del.quantity cm3/: -
1000H.: (6,0...16,0)
TD travel
                  mm: 5,2...6,0
                                                                      1/min: 500
                  mm: (4,9...6,3)
                                                        2nd speed
                                                        Del.quantity cm3/: 0,0...4,0
1000H.: -
Supply-pump pressure characteristic:
1st speed
               1/min: 500
                                                        Automatic starting fuel delivery:
Supply-pump
                 bar: 2,4...3,0
pressure
                                                        1st speed
                                                                       1/min: 270
2nd speed
               1/min: 1100
                                                        Del.quantity cm3/: -
Supply-pump
                                                                       1000H: 55.0
                                                         ind.
                 bar: 4,9...5,5
pressure
                                                                       1/min: 450
                                                        2nd speed
```

Del.quantity cm3/: ax. 1000H: 60,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

KF mm : 5,1...5,4
MS mm : 1,3..1,55
SVS max. mm : 1,6
XK mm : 20,2...22,2
XL mm : 10,8...14,2

Note inst. in remarks column

Test sheet : CUM 5,9 L4 Edition replaces : 14.07.87 replaces : 11.12.86 Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R173-8

: 0 460 426 101 Type number

Customer-specific information Customer : CUMMINS

Engine : 6BTA-5,9

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. OC

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

bar : 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Start of delivery block mm: 1,85 Piston stroke

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed Charge press. hPa: 1000 Setting value mm: 1,4...1,8

```
Supply-pump pressure characteristic:
Supply-pump pressure:
                                                                           1/min: 500
                                                           1st speed
                                                           Charge press. hPa: 1000
               1/min: 750
Speed
Charge press. hPa: 1000
Setting value bar: 3,2...3,8
                                                           Supply-pump
                                                                           bar: 2,1...2,7
1/min: 1050
                                                            pressure
                                                           2nd speed
Full-load del. with charge press.:
                                                                             hf 1: 1000
                                                           Charge press.
                                                           Supply-pump
                1/min: 750
Speed
                                                                             bar: 2,3...3,1
                                                            pressure
Charge press. hPa: 1000
Deliquantity cm3/
                                                           Overflow quantity at overflow valve:
               1000H.: 83,0...84,0
                cm3/: 4.0
Dispersion
                                                           1st speed
                                                                           1/min: 500
              1000H : (4,5)
                                                           Charge press. hPa: -
                                                           Oveflow
                                                                                 : 41...83
                                                           quantity cm3/10s: (26...98)
2nd speed 1/min: 1250
Full-load del. w/out charge press.:
                                                           Charge press. hPa: 1000
Overflow: 55...
Speed
              1/min : 500
Deliquantity cm3/
1000H.: 40,0...41,0
                                                                                 : 55...138
                                                             quantity cm3/10s: (40...153)
Low-idle speed regulation:
                                                           Delivery-quant. and breakaway char.:
                                                           1st speed
                                                                          1/min: 700
                1/min: 375
Speed
                                                           Charge-air pressure-setting
Charge press. hPa: -
                                                                             hPa: 450
                                                            point
Del.quantity cm3/
1000H.: 6,0...12,0
                                                           Del.quantity cm3/: 67.0...68.0
1000H.: (64.5...70.5)
2nd speed 1/min: 1400
Full-load speed regulation:
                                                           Charge press. hPa: 1000
Del.quantity cm3/: 0,0...3,0
1000H.: -
Speed
                1/min: 1300
Charge press. hPa: 1000
                                                                           1/min: 1370
Deliquantity
                                                           3rd speed
                cm3/
                                                           Charge press. hPa: 1000
Del.quantity cm3/: 0,0...15,0
1000H.: -
                1000H: 63,0...69,0
Start:
                                                           4th speed 1/min: 1330 Charge press. hPa: 1000
               1/min: 100
Speed
                                                           Del.quantity cm3/: 0,0...15,0
1000H.: -
Del.quantity
         cm3/1000H.: 70_0
mind
                                                           5th speed
                                                                           1/min: 1300
                                                           Charge press. hPa: 1000
Inspection-pump test specifications
                                                           Del.quantity cm3/: -
1000H.: (61,0...71,0)
6th speed 1/min: 1250
Test specifications in parentheses
                                                           Charge press. hPa: 1000
Del.quantity cm3/: 74,5...77,5
1000H.: (73,0...79,0)
Timing-device characteristic:
1st speed
               1/min: 600
                                                                           1/min: 1050
Charge press. hPa: 1000
                                                           7th speed
                                                           Charge press. hPa: 1000
Del.quantity cm3/: 79,0...82,0
1000H.: (77,5...83,5)
8th speed 1/min: 750
TD travel
                   mm: 0,4...1,2
                   mm: (0,1...1,5)
               1/min: 750
2nd speed
Charge press. hPa: 1000
                                                           Charge press. hPa: 1000
TD travel
                   mm:
                   mm: (0,9...2,3)
                                                           Del.quantity cm3/: -
               1/min: 1050
                                                                           1000H: (80,5...86,5)
3rd speed
                                                                           1/min: 500
Charge press.
                 hPa: 1000
                                                           9th speed
TD travel
                   mm: 2,3...3<sub>1</sub>
                                                           Charge press. hPa: 1000
                   mm: (2,0...3,4)
                                                           Del.quantity cm3/: 83,0...91,0
                                                                           1000H: (82,0...92,0)
```

```
10th speed
               1/min: 500
Charge press. hPa: -
Del.quantity cm3/: -
               1000H: (37,5...43,5)
Zero delivery (stop):
Electr. shutoff:
               1/min: 375
Speed
Del.quantity cm3/: -
              1000H.: -
max.
Idle delivery:
Mfg. date: until 1st speed 1/m
1st speed 1/min: 375
Del.quantity cm3/: -
1000H.: (4,0...14,0)
2nd speed 1/min: 500
Del.quantity cm3/: 0,0...4,0
              1000H.: -
Automatic starting fuel delivery:
1st speed
               1/min: 200
Del.quantity cm3/: -
               1000H: 60,0
 ind.
2nd speed
               1/min: 370
Del.quantity cm3/: -
               1000H: 60,0
 ax.
Shutoff electromagnet:
Cut-in
 min. voltage
Rated voltage
                    : -
Mounting and assembly dimensions:
Designation
                mm
                    : 5,1...5,4
: 1,3..1,55
: 2,2
KF
                mm
MS
                mm
SVS max.
                mm
                    : 18,8...20,8
XK
                mm
XL
                    : 12,9...16,3
                mm
Remarks:
Correction at adjusting nut (46)
```

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Low-idle speed regulation: Note inst. in remarks column Speed 1/min: 400 Deliquantity cm3/ Test sheet : PEU 2.5 A 1000H.: 6,0...10,0 : 29.06.87 cm3/: 2.5 1000H.: (3,0) Edition Dispersion : 10.12.86 replaces : ISO 4113 Calibrating oil Full-load speed regulation: : VE 4/ 9F2250 R84 1/min: 2325 Injection pump Speed : 0 460 494 079 Type number Deliquantity cm3/ 1000H: 25,5...31,5 Customer-specific information : PEUGEOT Customer Start: : XD3 505D Engine Speed 1/min: 100 Del.quantity mind cm3/1000H.: 45,0 TEST BENCH REQUIREMENTS Jane Bridge Bridge Calibrating-oil OC Load-dependent start of delivery: return temp. with thermometer : 40...48 1/min: 1250 Speed : 42...50 electronically Inspection-pump test specifications Inlet press., bar: 0,35 Test specifications in parentheses Calibrating nozzle-holder : 1 688 901 022 assembly Timing-device characteristic: Opening 1/min: 700 1st speed mm: 0,6...1,4 pressure bar : 130...133 TD travel mm: (0,3...1,7)1/min: 1250 2nd speed Test inj. tubing : 1 680 750 073 TD travel mm: mm: (3,5...4,9) 1/min: 2000 Outside diameter : 6 3rd speed mm: 8,1...8,9 mm: (7,8...9,2) x Wall thickness : 2 TD travel mm : 450 x Length Injection-pump setting values Supply-pump pressure characteristic: Test specifications in parentheses 1/min: 700 1st speed Supply-pump Timing-device travel: pressure bar: 3,0...3,6 1/min: 2200 1/min: 1250 2nd speed Speed Setting value mm: 4,0...4,4 Supply-pump bar: 7,5...8,1 pressure Supply-pump pressure: Overflow quantity at overflow valve: 1/min: 1250 Setting value bar: 5,0...5,6 1/min: 400 1st speed : 41...83 cm3/10s: (26...98) 1/min: 2250 Oveflow Full-load del. w/out charge press.: quantity 2nd speed : 55...138 Overflow 1/min : 1500 Speed quantity cm3/10s: (40...153) Del.quantity cm3/ 1000H.: 37.5...38,5 cm3/: 2.5 1000H.: (3,0) Dispersion Delivery-quant. and breakaway char.: 1st speed 1/min: 2550 001

```
Del.quantity cm5/: 1000H.:
                cm3/: 0,0...2,0
                1/min: 2450
2nd speed
Del. quantity cm3/: 4,5...12,5)
                1/min: 2325
3rd speed
Del.quantity cm3/: -
1000H.: (24,5...32,5)
                1/min: 2200
4th speed
Del.quantity cm3/: 39,0...41,0
1000H.: (37,8...42,2)
5th speed 1/min: 2000
Del.quantity cm3/: 38,5...40,5
1000H.: (37,3...41,7)
                1/min: 1500
6th speed
Del.quantity cm3/: -
1000H.: (35,8...40,2)
               1/min: 600
7th speed
Del.quantity cm3/: 35,5...38,5
1000H.: (34,0...40,0)
Zero delivery (stop):
Mech. shutoff:
               1/min: -
Speed
Del.quantity cm3/: - 1000H.: -
Idle delivery:
Mfg. date: until
1st speed
               1/min: 400
Del.quantity cm3/: -
1000H.: (4,0...12,0)
               1/min: 440
2nd speed
Del.quantity cm3/: 0,0...2,0
1000H.: -
Automatic starting fuel delivery:
               1/min: 350
1st speed
                cm3/: -
Del.quantity
                1000H: 45,0
 ind.
               1/min: 450
2nd speed
               cm3/: -
Del.quantity
               1000H: 45.0
 ax.
Shutoff electromagnet:
Cut-in
 min. voltage
                     : 10,0
Rated voltage
                     : 12,0
Mounting and assembly dimensions:
Designation
                     : K1
                mm
KF
                mm
                     7ر5...5ر :
MS
                mm
                     : 1,0..1,25
DOZ
```

SVS max. mm : 4,0 Remarks:

Note inst. in remarks column

Test sheet : SOF 2.5 G Edition : 06.07.87 replaces : -

Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2100 R22-5 Type number : 0 460 494 109

Customer-specific information : SOFIM Customer

: 8140.61.200 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening -

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0,02(0,03)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1800 Setting value mm: 7,4...7,8

Supply-pump pressure:

1/min: 1800 Setting value bar: 6,3...6,9

Full-load del. W/out charge press.:

Speed 1/min : 2000

Del.quantity cm3/ Overflow : 55...138 1000H.: 37,5...38,5 cm3/: 2,5 1000H.: (3,0) quantity cm3/10s: (40...153) Dispersion Delivery-quant. and breakaway char.: 1st speed 1/min: 2500 Low-idle speed regulation: Del.quantity cm3/: 0,0...4,5 1000H.: -1/min: 2350 Speed 1/min: 370 2nd speed Del.quantity cm3/: -1000H.: (18,0...16,0) Del.quantity cm3/ 1000H.: 8,0...12,0 1/min: 2100 / cm3/: 36,7...39,3 1000H.: (35,8...40,2) 1/min: 2000 cm3/: 2.0 1000H.: (3.0) Dispersion 3rd speed Del.quantity Full-load speed regulation: 4th speed Del.quantity cm3/: -1000H.: (35,8...40,2) 1/min: 2350 Speed Del.quantity cm3/ 1000H: 19,0...25,0 1/min: 1100 5th speed Del.quantity cm3/: 43.5...46.5 1000H.: (42.8...47.2) Start: 1/min: 600 6th speed Del.quantity cm3/: 35.3...38.3 1000H.: (33.8...39.8) 1/min: 100 Speed Del.quantity cm3/1000H.: 55,0 mind Zero delivery (stop): Load-dependent start of delivery: Mech. shutoff: 1/min: 1800 1/min: 2100 Speed Speed Del.quantity cm3/: - 1000H.: -Inspection-pump test specifications Test specifications in parentheses Idle delivery: Timing-device characteristic: Mfg. date: until : -1/min: 370 1st speed 1/min: 400 Deliquantity cm3/: 1st speed mm: 1,8...2,8 1000H.: (6,0...14,0) TD travel mm: (1,6...3,0)1/min: 420 2nd speed Del.quantity cm3/: 0,0...1,5 1000H.: -1/min: 1800 2nd speed TD travel mm: mm: (6,9...8,3) 1/min: 500 3rd speed Del.quantity cm3/: 0,0...3,0 3rd speed 1/min: 2100 mm: 8,4...9,2 1000H.: -TD travel mm: (8,1...9,5)Automatic starting fuel delivery: Supply-pump pressure characteristic: 1st speed 1/min: 400 1/min: 400 Del.quantity cm3/: -1st speed Supply-pump ind. 1000H: 37,0 bar: 2,9...3,5 pressure 1/min: 2100 1/min: 480 2nd speed 2nd speed Del.quantity cm3/: 32,0...38,0 Supply-pump 1000H: pressure bar: 6,9...7,5 ax. Overflow quantity at overflow valve: Shutoff electromagnet: 1/min: 600 1st speed Cut-in : 41...83 : 10,0 Oveflow min, voltage cm3/10s: (26...98) quantity Rated voltage : 12.0 1/min: 2100 2nd speed Mounting and assembly dimensions: D04

Designation K KF MS SVS max. mm : -mm : 5,4...5,7 mm : 1,7..1,95 mm : 2,6

Note inst. in remarks column

: PEU 2,5 A1 Test sheet : 30.06.87 Edition replaces : 10.12.86 Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R84-1 Type number : 0 460 494 125 : 0 460 494 125 Type number

Customer-specific information Customer : PEUGEOT

: XD3 505D Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 : 42...50 electronically

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening |

bar : 130...133 pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Setting value mm: 4,0...4,4

Supply-pump pressure:

1/min: 1250 Setting value bar: 5,0...5,6

Full-load del. W/out charge press.:

Speed 1/min : 1500

Del.quantity cm3/ 1000H.: 37,5...38,5 Dispersion cm3/: 2,5 1000H.: (3,0)

```
Del.quantity cm3/: 0,0...2,0
1000H.: -
Low-idle speed regulation:
                                                                        1/min: 2450
                                                         2nd speed
                                                         Del.quantity cm3/: 4,5...12,5
1000H.: (4,5...12,5)
3rd speed 1/min: 2325
               1/min: 400
Speed
Del.quantity cm3/
1000H.: 6,0...10,0
                                                         Del.quantity cm3/: -
1000H.: (24,5...32,5)
              cm3/: 2.5
1000H.: (3,0)
Dispersion
                                                         4th speed 1/min: 2200
Del.quantity cm3/: 39,0...41,0
1000H.: (37,8...42,2)
Full-load speed regulation:
               1/min: 2325
Speed
                                                         5th speed 1/min: 2000
Del.quantity cm3/: 38,5...40,5
1000H.: (37,3...41,7)
6th speed 1/min: 1500
Deliquantity cm3/
               1000H: 25,5...31,5
Start:
                                                         Del.quantity cm3/: -
1000H.: (35,8...40,2)
               1/min: 100
Speed
                                                                        1/min: 600
Del.quantity
                                                         7th speed
         cm3/1000H.: 45,0
                                                         Del.quantity cm3/: 35,5...38,5
1000H.: (34,0...40,0)
mind
Load-dependent start of delivery:
                                                         Zero delivery (stop):
Speed
               1/min: 1250
                                                         Mech. shutoff:
Inspection-pump test specifications
                                                         Speed
                                                                       1/min: -
                                                         Del.quantity cm3/: -
Test specifications in parentheses
                                                                       1000H.: -
Timing-device characteristic:
                                                         Idle delivery:
1st speed
               1/min: 700
                                                         Mfg. date: until : -
                  mm: 0,6...1,4
mm: (0,3...1,7)
TD travel
                                                                      1/min: 400
                                                         1st speed
                                                         Del.quantity cm3/: -
                                                                       1000H.: (4,0...12,0)
2nd speed
               1/min: 1250
                                                                       1/min: 440
TD travel
                  mm:
                                                         2nd speed
                                                         Del.quantity cm3/: 0,0...2,0
1000H.: -
                  mm: (3,5...4,9)
               1/min: 2000
3rd speed
                  mm: 8,1...8,9
mm: (7,8...9,2)
TD travel
                                                         Automatic starting fuel delivery:
Supply-pump pressure characteristic:
                                                                        1/min: 350
                                                         1st speed
                                                         Del.quantity cm3/: -
                                                                        1000H: 45,0
               1/min: 700
                                                          ind.
1st speed
Supply-pump
                 bar: 3,0...3,6
                                                                        1/min: 450
 pressure
                                                         2nd speed
2nd speed
               1/min: 2200
                                                         Del.quantity
                                                                       cm3/: -
                                                                        1000H: 45,0
                                                          ax.
Suppiy-pump
                 bar: 7,5...8,1
 pressure
                                                         Shutoff electromagnet:
Overflow quantity at overflow valve:
                                                         Cut-in
               1/min: 400
                                                                              : 10,0
1st speed
                                                          min. voltage
Oveflow
                     : 41...83
                                                         Rated voltage
                                                                              : 12,0
            cm3/10s: (26...98)
 quantity
            1/min: 2250
                                                         Mounting and assembly dimensions:
2nd speed
                   : 55...138
Overflow
 quantity cm3/10s: (40...153)
                                                         Designation
                                                                              : K1
                                                                         mm
                                                         KF
                                                                             : 5,4...5,7
Delivery-quant. and breakaway char.:
                                                                         mm
                                                         MS
                                                                             : 1,2..1,45
1st speed 1/min: 2550
                                                                         mm
```

D07

SVS max. mm : 4,0
Remarks:

Note inst. in remarks column

Test sheet : VWW 1,6 W3
Edition : 07.07.87
replaces : 03.84
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R149 Type number : 0 460 494 138

Customer-specific information

Customer : V

Engine : 086T

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Charge press. hPa: 750 Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 750 Setting value bar: 4,6...5,2

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 750

```
Del.quantity cm3/
1000H.: 43,5...44,5
Dispersion cm3/: 2,5
1000H: (3,0)
                                                                 Supply-pump
                                                                                     bar: 6,5...7,1
                                                                   pressure
                                                                 Overflow quantity at overflow valve:
Full-load del. w/out charge press.:
                                                                                  1/min: 600
                                                                 1st speed
                                                                 Charge press. hPa: -
                1/min: 600
                                                                 Oveflow
Speed
                                                                 quantity cm3/10s: (50...75)
2nd speed 1/min: 2250
Charge press. hPa: 750
Overflow : 82...112
Del.quantity cm3/
                1000H.: 23,5...24,5
Low-idle speed regulation:
                                                                   verflow : 82...112
quantity cm3/10s: (77...117)
                 1/min: 475
Charge press. hPa: -
                                                                 Delivery-guant. and breakaway char.:
Del.quantity
                 cm3/
                                                                 1st speed
                                                                                 1/min: 1000
                1000H.: 6,0...10,0
cm3/: 2,0
1000H.: (3,0)
                                                                 Charge-air pressure-setting point hPa: 300
Dispersion
                                                                 LDA stroke mm: 4.0
Del. quantity cm3/: 33.5...34.5
1000H.: (31.0...37.0)
Full-load speed regulation:
                                                                                  1/min: 2750
                 1/min: 2525
Speed
                                                                 2nd speed
Charge press. hPa: 750
                                                                 Charge press. hPa: 750
Del.quantity cm3/
                                                                 Del.quantity cm3/: 0,0...3,0
1000H.: -
                 1000H: 10,0...14,0
                                                                 3rd speed 1/min: 2525
Charge press. hPa: 750
Start:
                                                                 Del.quantity cm3/: -
1000H.: (8,0...16,0)
Speed
                 1/min: 100
                                                                 1000H.: (8,0...16,0)

4th speed 1/min: 2425

Charge press. hPa: 750

Del.quantity cm3/: 22,0...32,0

1000H.: (21,0...33,0)

5th speed 1/min: 2250

Charge press. hPa: 750

Del.quantity cm3/: 37,5...39,5

1000H.: (36,3...40,7)

6th speed 1/min: 1500
Charge press. hPa: -
Del.quantity
mind cm3/1000H.: 35.0
Inspection-pump test specifications
Test specifications in parentheses
                                                                                   1/min: 1500
Timing-device characteristic:
                                                                 6th speed
                                                                 Charge press. hPa: 750
                                                                 Del.quantity cm3/: -
1000H.: (41,8...46,2)
7th speed 1/min: 600
1st speed
                 1/min: 1000
Charge press. hPa: 750
                     mm: 1.8...2.6
mm: (1.5...2.9)
ID travel
                                                                 7th speed
                                                                 Charge press. hPa: -
                                                                 Del.quantity cm3/: -
1000H.: (21,0...27,0)
                 1/min: 1500
2nd speed
Charge press. hPa: 750
TD travel
                     mm: -
                 mm: (3,3...4,7)
1/min: 2250
                                                                 Zero delivery (stop):
3rd speed
Charge press. hPa: 750
                                                                 Electr. shutoff:
                     mm: 6,1...6,9
mm: (5,8...7,2)
                                                                                  1/min: 475
TD travel
                                                                 Speed
                                                                 ELAB
                                                                                   volt: -
                                                                 Del.quantity cm3/: 0,0...3,0 max. 1000H.: -
Supply-pump pressure characteristic:
                 1/min: 600
                                                                 Idle delivery:
1st speed
Charge press. hPa: 750
                                                                 Mfg. date: until : -
Supply-pump
                 bar: 2,5...3,1
1/min: 2250
 pressure
                                                                 1st speed 1/min: 475
2nd speed
                                                                 Del.quantity cm3/: -
                                                                                 1000H.: (4,0...12,0)
Charge press. hPa: 750
010
```

```
2nd speed 1/min: 1200
Del.quantity cm3/: 0,0...4,0
1000H.: -
Automatic starting fuel delivery:
1st speed
                1/min: 400
Charge press. hPa: -
Del.quantity cm3/: -
ind. 1000H: 22,0
2nd speed
                1/min: 500
Charge press. hPa: -
Del.quantity cm3/: -
                1000H: 30,0
 ax.
Shutoff electromagnet:
Cut-in
                      : 10,0
min. voltage
Rated voltage
                      : 12,0
Mounting and assembly dimensions:
Designation
                      : 3,2...3,4
: 5,7...6,0
                 mm
KF
                 mm
                     : 1,2..1,45
: 3,8
: 18,4...20,4
MS
                 m_{m}
SVS max.
                 mm
XK
                 mm
XL
                     : 8,6...12,0
                 mm
Remarks:
```

Del.quantity cm3/ 1000H.: 41,5...42,5 Dispersion cm3/: 2,5 BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column 1000H : (3,0): VWW 1,6 X2 Test sheet Full-load del. w/out charge press.: : 17.07.87 Edition replaces : 02.04.87 Speed 1/min : 1500 Del.quantity cm3/ 1000H.: 34,3...37,3 Calibrating oil : ISO 4113 : VE 4/ 9F2250 R211 Injection pump : 0 460 494 172 Low-idle speed regulation: Type number Customer-specific information 1/min: 400 Customer Charge press. hPa: -Del.quantity cm3/ 1000H.: 9,0...11,0 Engine : 086-1,6L. LLK cm3/: 2.5 1000H.: (3.0) Dispersion TEST BENCH REQUIREMENTS Residual-Delivery Setting Calibrating-of Line 1997 1/min: 550 Speed return temp. °C Charge press. hPa: with thermometer : 40...48 Del.quantity cm3/ electronically : 42...50 1000H.: 2,5...3,5 Full-load speed regulation: Inlet press., bar: 0,35 Speed 1/min: 2525 Charge press. hPa: 750 Calibrating nozzle-holder : 1 688 901 000 assembly Del.quantity cm3/ 1000H: 7,0...13,0 Opening pressure bar : 147...150 Start: Speed 1/min: 100 Test inj. tubing : 1 680 750 017 Del.quantity mind cm3/1000H.: 35.0 Outside diameter x Wall thickness Inspection-pump test specifications mm: 840 Test specifications in parentheses x Length Injection-pump setting values Test specifications in parentheses Timing-device characteristic: 1/min: 1000 Timing-device travel: 1st speed Charge press. hPa: 750 mm: 1,8...2,6 mm: (1,5...2,9) 1/min: 1500 TD travel Speed Charge press. hPa: 750 1/min: 1500 Setting value mm: 3,8...4,2 2nd speed Charge press. hPa: 750 Supply-pump pressure: TD travel mm: mm: (3,3...4,7)1/min: 1500 1/min: 1800 3rd speed Speed Charge press. hPa: 750 Charge press. hPa: 750 mm: 4.8...5.6 mm: (4.5...5.9) 1/min: 2250 Setting value bar: 4,9...5,5 TD travel Full-load del. with charge press.: 4th speed Charge press. hPa: 750 mm: 6,1...6,9 mm: (5,8...7,2) Speed 1/min: 1500 TD travel Charge press. hPa: 750

Supply-pump pressure characteristic:	Del.quantity cm3/: 31,034,0 1000H: (29,535,5)
1st speed 1/min: 500   Charge press. hPa: 750	Zero delivery (stop):
Supply-pump i pressure bar: 2.02.6 i	Electr. shutoff:
pressure bar: 2,02,6	Speed 1/min: 425
Charge press. hPa: 750	ELAB volt: -
Supply-pump	Del.quantity cm3/: 0,03,0 max. 1000H.: -
pressure bar: 7,07,6	max. 1000n.; "
Overflow quantity at overflow valve:	Idle delivery:
1st speed 1/min: 500	Mfg. date: until : -
Charge press. hPa: -	1st speed 1/min: 400
Oveflow : 4183	Del.quantity cm3/: - 1000H.: (4,515,5) 2nd speed 1/min: 425
quantity cm3/10s: (2698)	ובקבוכקבובילו 2nd coeed 1/min: /25
Charge press. hPa: 750	Del.quantity cm3/: 5,09,0
Overflow : 55138	1000H.: (1,512,5)
quantity cm3/10s: (40153)	High Idle:
	Speed 1/min: 525
Delivery-quant. and breakaway char.:	Deliquantity cm3/: 7,09,0
1st speed 1/min: 900	1000H.: (3,013,0)
Charge-air pressure-setting	Residual:
LDA stroke mm: 6,0	Speed 1/min: 500
Del.quantity cm3/: 32.533.5	Del.quantity : 1,03,0
1000H.: (30,036,0)	1000H.: (0,05,5)
1000H.: (30.036.0)   2nd speed 1/min: 2650	
Charge press. hPa: 750	Automatic starting fuel delivery:
Del.quantity cm3/: 0,06,0	1at area 4/mins 150
1000H.: - I 3rd speed	1st speed 1/min: 150
Charge press. hPa: 750	Del.quantity cm3/: - ind. 1000H: 35,0
Del.quantity cm3/: - 1000H.: (6,014,0)	
1000H.: (6,014,0)	2nd speed 1/min: 350
4th speed 1/min: 2425	Del.quantity cm3/: - ax. 1000H: 30,0
Charge press. hPa: 750	ax. 1000H: 30,0
Del.quantity cm3/: 21.531.5   1   1   1   1   1   1   1   1   1	Shutoff electromagnet:
5th speed 1/min: 2250	sitatori erecti ollagilet.
Charge press. hPa: 750	Cut-in
Del.quantity cm3/: 35,537,5	min. voltage : 10.0
1000H.: (34,338,7)	Rated voltage : 12,0
6th speed 1/min: 1500	
Charge press. hPa: -	Mounting and assembly dimensions:
Del.quantity cm3/: - 1 1000H.: (32,838,8)	Designation
7th speed 1/min: 1500	K mm : K1
Charge press. hPa: 750	KF mm : 5,76,0
Del.quantity cm3/: -	MS mm : 1,21,45
1000H.: (39,844,2)	SVS max. mm : 2,8
8th speed 1/min: 500	Pamanka :
Charge press. hPa: -   Del.quantity cm3/: 23,524,5	Remarks:
1000H: (21,027,0)	
9th speed 1/min: 500	Correction at adjusting nut (46)
Charge press, hPa: 750	,

Note inst. in remarks column

Test sheet : VWW 1,6 X5 Edition : 17.07.87 replaces : -

Calibrating oil : ISO 4113

Injection pump Type number : VE 4/ 9F2250 R254 : 0 460 494 200

Customer-specific information

Customer

: 086-1,6L Engine

### TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening |

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250 Charge press. hPa: 500 Setting value mm: 2,1...2,5

Supply-pump pressure:

Speed 1/min: 1250 Charge press. hPa: 500 Setting value bar: 4,0...4,6

Full-load del. with charge press.:

Speed 1/min: 1000 Charge press. hPa: 500

```
Del.quantity cm3/
1000H.: 27,5...28,5
Dispersion cm3/: 2,5
1000H: (3,0)
                                                                          Supply-pump pressure characteristic:
                                                                                             1/min: 600
                                                                          1st speed
                                                                          Charge press. hPa: 500
                                                                          Supply-pump
                                                                                             bar: 2,1...2,7
1/min: 2250
Full-load del. w/out charge press.:
                                                                           pressure
                                                                          2nd speed
Speed
                                                                          Charge press.
Supply-pump
                                                                                                hPa: 500
                  1/min : 1000
Del.quantity cm3/
1000H.: 25,3...26,7
                                                                           pressure
                                                                                                bar: 6,9...7,5
Low-idle speed regulation:
                                                                          Overflow quantity at overflow valve:
                    1/min: 375
                                                                          1st speed
                                                                                             1/min: 600
Charge press. hPa: -
                                                                                                    : 41...83
Charge production cm3/
Del.quantity cm3/
1000H.: 12,0...14,0
Dispersion cm3/: 2,0
1000H.: (3,0)
                                                                          Oveflow
                                                                           quantity cm3/10s: (26...98)
                                                                          2nd speed 1/min: 2250
Charge press. hPa: 500
Overflow: 55...138
                                                                           quantity cm3/10s: (40...153)
Residual-Delivery Setting
Speed 1/min: 5:
Charge press. hPa: -
                    1/min: 550
                                                                          Delivery-quant. and breakaway char.:
                                                                          1st speed
                                                                                            1/min: 1000
Deliquentity cm3/
                  1000H.: 2,5..3,5(+-1,5)
                                                                          Charge-air pressure-setting
                                                                         point hPa: 225
Del.quantity cm3/: 26,5...27,5
1000H.: (24,0...30,0)
2nd speed 1/min: 2700
Full-load speed regulation:
Speed
                    1/min: 2475
Charge press. hPa: 5001
                                                                         Charge press. hPa: 500
Del.quantity cm3/: 0,0...6,0
1000H.: -
Del.quantity cm3/
                    1000H: 11,0...17,0
                                                                         3rd speed 1/min: 2475
Charge press. hPa: 500
Del.quantity cm3/: -
1000H.: (10,0...18,0)
4th speed 1/min: 2400
Start:
                    1/min: 100
Speed
Del.quantity
           cm3/1000H.: 35,0
mind
                                                                          Charge press. hPa: 500
                                                                         Del.quantity cm3/: 16.0...26.0
1000H.: (15.0...27.0)
5th speed 1/min: 1000
Load-dependent start of delivery:
Speed
                    1/min: 1250
                                                                          Charge press. hPa: -
                                                                         Del.quantity cm3/: -
1000H.: (23,0...29,0)
6th speed 1/min: 1000
Inspection-pump test specifications
Test specifications in parentheses
                                                                         Charge press. hPa: 150
Del.quantity cm3/: 25,3...26,7
1000H.: (23,0...29,0)
7th speed 1/min: 1000
Charge press. hPa: 300
Del.quantity cm3/: 27,5...28,5
1000H.: (25,8...30,2)
8th speed 1/min: 600
Charge press. hPa: 500
Timing-device characteristic:
                    1/min: 1000
1st speed
Charge press. hPa: 500
                        mm: 0,9...1,7
TD travel
                        mm: (0,6...2,0)
                    1/min: 1250
2nd speed
                                                                         Charge press. hPa: 500
Del.quantity cm3/: 21.0...24.0
1000H: (19.5...25.5)
9th speed 1/min: 2250
Charge press. hPa: 500
TD travel
                        mm:
                    mm: (1,6...3,0)
1/min: 2250
3rd speed
                                                                         Charge press. hPa: 500
Del.quantity cm3/: 27,5...29,5
1000H: (26,3...30,7)
10th speed 1/min: 1000
Charge press. hPa: 500
                       mm: 6,6...7,4
mm: (6,3...7,7)
10 travel
```

```
Charge press. hPa: 500
Del.quantity cm3/: -
                1000H: (25,8...30,2)
Zero delivery (stop):
Electr. shutoff:
Speed
ELAB
                1/min: 425
                 volt: -
Del.quantity cm3/: 0,0...3,0 max. 1000H.: -
Idle delivery:
Nfg. date: until
1st speed
                1/min: 375
Del.quantity cm3/: -
1000H.: (9,0...17,0)
2nd speed 1/min: 425
Del.quantity cm3/: 5,5...8,5
1000H.: (3,0...11,0)
High Idle:
Speed 1/min: 525
Del.quantity cm3/: 7,0...9,0
1000H.: (4,0...12,0)
Residual:
                1/min: 500
Speed
Del.quantity : 3,2....6,7)
Automatic starting fuel delivery:
1st speed
                1/min: 180
Deliquantity cm3/: -
                1000H: 35,0
 ind.
2nd speed
               1/min: 380
Del.quantity cm3/: -
                1000H: 30,0
Shutoff electromagnet:
Cut-in
                       : 10,0
 min. voltage
                      : 12,0
Rated voltage
Mounting and assembly dimensions:
Designation
                      : 3,2...3,4
: 5,7...6,0
: 1,3..1,55
                 mm
KF
                 mm
MS
                 mm
SVS max.
                 mm
Remarks:
```

Note inst. in remarks column

Test sheet : VWW 1,6 W19 : 27.07.87 Edition replaces : 02.04.87 Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2400 R221-2

: 0 460 494 207 Type number

Customer-specific information

Customer

Engine : 086-1.6L

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Setting value mm: 2,1...2,5

Supply-pump pressure:

1/min: 1250 Speed Setting value bar: 4,0...4,6

Full-load del. w/out charge press.:

1/min : 1000 Speed

Del.quantity cm3/ 1000H.: 28,5...29,5 Dispersion cm3/: 2,5 1000H.: (3,0)

1	Oveflow : 4183
Low-idle speed regulation:	quantity cm3/10s: (2698)
Speed 1/min: 375	2nd speed 1/min: 2400 Overflow : 55138
Deliquantity cm3/	quantity cm3/10s: (40153)
1000H.: 11,013,0	
Dispersion cm3/: 2,0 1 1 1000H.: (3,0)	Delivery-quant. and breakaway char.:
Residual-Delivery Setting	1st speed 1/min: 2800 Del.quantity cm3/: -
Speed 1/min: 550	1000H.: 0,06,0
Del.quantity cm3/	2nd speed 1/min: 2600
1000H.: 2,53,5   Full-load speed regulation:	Del.quantity cm3/: - 1000H.: (10,018,0)
race toda speed regarderon.	3rd speed 1/min: 2500
Speed 1/min: 2600	Del.quantity cm3/: 19.029.0
Del.quantity cm3/	1000H.: (18,030,0)
1000H: 11,017,0	4th speed 1/min: 2400 Del.quantity cm3/: 27,529,5
Start:	1000H.: (26,330,7)
1	5th speed 1/min: 1000
Speed 1/min: 100	Del.quantity cm3/: -
Del.quantity :- I mind cm3/1000H.: 35,0	1000H.: (26,831,2) 6th speed 1/min: 600
	Del.quantity cm3/: 22,525,5
Load-dependent start of delivery:	1000H.: (21,027,0)
Speed 1/min: 1250	Zero delivery (stop):
17 111111111111111111111111111111111111	•
Inspection-pump test specifications	Electr. shutoff:
Test specifications in parentheses	Speed 1/min: 425 ELAB volt: -
	Del.quantity cm3/: 0,03,0
Timing-device characteristic:	max. 1000H.: -
4a4 anna 4 (vin x 4000	Tala dalinama
1st speed	Idle delivery:
mm: (0,72,1)	Mfg. date: until : -
2nd speed 1/min: 1250	1st speed 1/min: 375
TD travel mm: -	Del.quantity cm3/: -
mm: (1.63.0)  3rd speed 1/min: 1800	1000H.: (8,016,0) 2nd speed 1/min: 425
TD travel mm: 4,25,0	Deliquantity cm3/: 5,58,5
mm: (3,95,3)	1000H.: (3,011,0)
4th speed 1/min: 2400	High Idle: Speed 1/min: 525
TD travel mm: 6,16,9 1 mm: (5,87,2)	Speed 1/min: 525 Del.quantity cm3/: 7,09,0
	1000H.: (4,012,0)
Supply-pump pressure characteristic:	O and dual a
1st speed 1/min: 600	Residual: Speed 1/min: 500
Supply-pump I	Del.quantity : 2,54,5
pressure bar: 2,12,7	1000H.: (1,06,0)
2nd speed 1/min: 2400	Automotic stanting fuel delivery
Supply-pump   pressure bar: 7,37,9	Automatic starting fuel delivery:
pi 0300i 0	1st speed 1/min: 180
Overflow quantity at overflow valve:	Del.quantity cm3/: -
1st speed 1/min; 600	ind. 1000H: 35,0
1st speed 1/min: 600	2nd speed 1/min: 380
·	and approximately and a second
020	

Del.quantity cm3/: - ax. 1000H: 30,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions:

Designation

mm : 3,2...3,4 mm : 5,7...6,0 mm : 1,3..1,55 mm : 3,1 K KF MS

SVS max.

Note inst. in remarks column

Test sheet : VWW 1.6 X5 : 16.07.87 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R270

: 0 460 494 210 Type number

Customer-specific information

Customer

Engine : 086-1.6L

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening |

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Injection-pump setting values Test specifications in parenthuses

Timing-device travel:

1/min: 1250 Setting value mm: 2,1...2,5

Supply-pump pressure:

1/min: 1250 Setting value bar: 4,0...4,6

Full-load del. W/out charge press.:

1/min : 1000 Speed

Del.quantity cm3/

1000H.: 27,5...28,5 cm3/: 2,5 1000H.: (3,0) Dispersion

```
Overflow
                                                                                 : 55...138
                                                             quantity cm3/10s: (40...153)
Low-idle speed regulation:
Speed
                1/min: 375
                                                           Delivery-quant. and breakaway char.:
Del.quantity cm3/
1000H.: 11.0...13.0
Dispersion cm3/: 2.0
1000H.: (3.0)
                                                                           1/min: 2700
                                                           1st speed
                                                           Del.quantity cm3/: 0,0...6,0
                                                                          1000H.: -
                                                            2nd speed
                                                                           1/min: 2475
                                                           Del.quantity cm3/: -
1000H.: (10.0...18.0)
3rd speed 1/min: 2400
Residual-Delivery Setting
Speed 1/min: 550
Del.quantity cm3/
1000H.: 2,5..3,5(+-1,5)
                                                           Del.quantity cm3/: 16.0...26.0
1000H.: (15.0...27.0)
4th speed 1/min: 2250
Full-load speed regulation:
                                                           Del.quantity cm3/: 26,5...28,5
1000H.: (25,3...29,7)
Speed
                1/min: 2475
Del.quantity cm3/
                                                                           1/min: 1000
                1000H: 11,0...17,0
                                                           5th speed
                                                           Del.quantity cm3/: -
1000H.: (25,8...30,2)
6th speed 1/min: 600
Del.quantity cm3/: 21,0...24,0
1000H.: (19,5...25,5)
Start:
               1/min: 100
Speed
Del.quantity
         cm3/1000H.: 35,0
mind
                                                           Zero delivery (stop):
Load-dependent start of delivery:
                                                           Electr. shutoff:
                1/min: 1250
Speed
                                                           Speed
                                                                           1/min: 425
                                                           ELAB
                                                                            volt: -
                                                           Del.quantity cm3/: 0,0...3,0
Inspection-pump test specifications
                                                                          1000H.: -
Test specifications in parentheses
                                                           Idle delivery:
Timing-device characteristic:
                                                           Mfg. date: until : -
                                                           1st speed
                                                                          1/min: 375
1st speed
                1/min: 1000
                   mm: 0,9...1,7
TD travel
                                                           Del.quantity cm3/: -
1000H.: (8,0...16,0)
                   mm: (0,6...2,0)
                1/min: 1250
                                                                           1/min: 425
2nd speed
                                                           2nd speed
                                                           Del.quantity cm3/: 5,5...8,5
1000H.: (3,0...11,0)
10 travel
                   mm: -
                mm: (1,6...3,0)
1/min: 2250
3rd speed
                                                           High Idle:
                                                           Speed 1/min: 525
Del.quantity cm3/: 7.0...9.0
1000H.: (4.0...12.0)
                   mm: 6,6...7,4
mm: (6,3...7,7)
TD travel
Supply-pump pressure characteristic:
                                                           Residual:
                1/min: 600
                                                                           1/min: 500
1st speed
                                                           Speed
                                                           Del.quantity
                                                                              : 3,2...5,2
Supply-pump
                                                                          1000H.: (1,7...6,7)
                  bar: 2,1...2,7
 pressure
2nd speed
               1/min: 2250
Supply-pump
                                                           Automatic starting fuel delivery:
                  bar: 6,9...7,5
 pressure
                                                                           1/min: 180
                                                           1st speed
Overflow quantity at overflow valve:
                                                           Del.quantity cm3/: -
                                                                           1000H: 35,0
                                                            ind.
                1/min: 600
1st speed
Oveflow
                      : 41...83
                                                                           1/min: 380
                                                           2nd speed
 quantity cm3/10s: (26...98)
                                                           Del.quantity cm3/: -
             1/min: 2250
2nd speed
                                                                           1000H: 30,0
                                                            ax.
```

Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation K mm : 3,2...3,4 mm : 5,7...6,0 mm : 1,3..1,55 mm : 3,7 MS SVS max.

Note inst. in remarks column

Test sheet : FIA 3.9 C : 17.07.87 Edition replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 R282 : 0 460 494 214

Type number

Customer-specific information Customer : FIAT

: M 705 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening -

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm: 450

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Setting value mm: 4,3...4,7

Supply-pump pressure:

1/min: 1500 Speed Setting value bar: 5,6...6,2

Full-load del. W/out charge press.:

1/min : 1500 Speed Del.quantity cm3/

1000H.: 34,5...35,5 cm3/: 2,5 1000H.: (3,0) Dispersion

Del.quantity cm3/: 0,0...3,5 1000H.: -Low-idle speed regulation: 1/min: 2650 2nd speed Del.quantity cm3/: 3,5...10,5 1000H.: (3,0...11,0) 1/min: 390 Speed Del.quantity cm3/ 1000H.: 9,0...13,0 1/min: 2450 3rd speed Del.quantity cm3/: -1000H.: (22,8...27,2) cm3/: 2,5 Dispersion 1000H.: (3,0) 1/min: 2300 Full-load speed regulation: 4th speed Del.quantity cm3/: 35,5...38,5 1000H.: (34,8...39,2) 5th speed 1/min: 1500 1/min: 2450 Speed Del.quantity cm3/ Del.quantity cm3/: 1000H.: (32,8...37,2) 1000H: 22,0...28,0 Start: 6th speed 1/min: 1000 Del.quantity cm3/: 34,2...36,8 1000H.: (33,3...37,7) 1/min: 100 Speed Del.quantity 7th speed 1/min: 600 Del.quantity cm3/: 36,0...39,0 1000H.: (34,5...40,5) cm3/1000H.: 55,0 mind Load-dependent start of delivery: Zero delivery (stop): Speed 1/min: 1500 Mech. shutoff: Inspection-pump test specifications 1/min: 2300 Speed Del.quantity cm3/: - 1000H.: -Test specifications in parentheses Timing-device characteristic: Idle delivery: Mfg. date: until : -1st speed 1/min: 800 TD travel mm: 1,7...2,5 1/min: 390 1st speed mm: (1,4...2,8) Del.quantity cm3/: -1000H.: (7,0...15,0 2nd speed 1/min: 1500 TD travel mm: 2nd speed 1/min: 440 Del.quantity cm3/: 1.0...7.0 1000H.: (0.0...8.0) mm: (3,8...5,2)1/min: 2300 3rd speed 1/min: 500 mm: 7,1...7,9 1D travel 3rd speed Del.quantity cm3/: 0,0...2,5 1000H.: mm: (6,8...8,2)Supply-pump pressure characteristic: Automatic starting fuel delivery: 1/min: 400 1st speed Supply-pump 1/min: 300 1st speed bar: 2,9...3,4 1/min: 2300 Del.quantity cm3/: pressure 1000H: 45,0 2nd speed ind. Supply-pump bar: 7,4...8,0 2nd speed 1/min: 400 pressure Del.quantity cm3/: -1000H: 46,0 Overflow quantity at overflow valve: 1st speed 1/min: 400 Shutoff electromagnet: Oveflow : 41...83 quantity cm3/10s: (26...98) Cut-in 1/min; 2300 2nd speed : 10,0 min. voltage : 55...138 Overflow Rated voltage : 12,0 quantity cm3/10s: (40...153) Mounting and assembly dimensions: Delivery-quant. and breakaway char.: 1st speed 1/min: 2750 Designation

K mm : 3,2...3,4
KF mm : 5,7...6,0
MS mm : 1,7..1,95
SVS max. mm : 2,5

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1,9 D2 Edition replaces : 07.07.87

Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 R162-2 Type number : D 460 494 215

: 0 460 494 215 Type number

Customer-specific information : PEUGEOT

: XUD9 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0,35

Calibrating nozzle-holder

: 1 688 901 022 assembly

Openina

pressure bar : 130...133

Test in i. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm: 450

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250 Setting value mm: 3,3...3,7

Supply-pump pressure:

Speed 1/min: 1250 Setting value bar: 4,2...4,8

Full-load del. w/out charge press.:

1/min : 1250 Speed

Del.quantity cm3/

1000H.: 29,5...30,5 cm3/: 2,5 1000H.: (3,0) Dispersion

Overflow | : 55...138 quantity cm3/10s: (40...153) Low-idle speed regulation: Speed 1/min: 375 Delivery-quant. and breakaway char.: Del.quantity 1/min: 2650 cm3/ 1st speed 1000H.: 7,0...9,0 Del.quantity cm3/: 0,0...7,0 cm3/: 2,5 1000H.: (3,0) 1000H.: -Dispersion 1/min: 2500 2nd speed Del.quantity cm3/: 10.0...16.0 1000H.: (9.0...17.0) Residual-Delivery Setting Speed 1/min: 550 Del.quantity cm3/ 1000H.: 2,5...3,5 1/min: 2400 3rd speed Del.quantity cm3/: 1000H.: (19,0...27,0)
4th speed 1/min: 2250 Full-load speed regulation: Del.quantity cm3/: 29.8...31.8 1000H.: (28.6...33.0) Speed 1/min: 2400 Del.quantity cm3/ 1000H: 20,0...26,0 1/min: 2000 5th speed Del.quantity cm3/: 30,0...32,8) Start: 1/min: 1250 6th speed Del.quantity cm3/: -1000H.: (27,8...32,5) 1/min: 100 Speed Del.quantity cm3/1000H.: 44.0 1/min: 800 mind 7th speed Del.quantity cm3/: 30,5...33,5 1000H.: (29,0...35,0) Load-dependent start of delivery: 1/min: 500 8th speed Del.quantity cm3/: 29.5...32.5 1000H: (28.0...34.0) 1/min: 1250 Speed Inspection-pump test specifications Test specifications in parentheses Zero delivery (stop): Electr. shutoff: Speed Timing-device characteristic: 1/min: 2300 ELAB volt: . Del.quantity cm3/: - max. 1900H.: -1st speed 1/min: 800 mm: 0,4...1,2 mm: (0,1...1,5) 1/min: 1250 TD travel 2nd speed Idle delivery: TD travel mm: mm: (2,8...4,2) Mfg. date: until : -1/min: 375 1/min: 2000 1st speed 3rd speed Del.quantity cm3/: -1000H.: (4,0...12,0) mm: 7.1...7.9 mm: (6,8...8,2) TD travel High Idle: Speed 1/min: 470 Del.quantity cm3/: 7.0...9.0 Supply-pump pressure characteristic: 1000H.: (4,0...12,0) 1st speed 1/min: 800 Supply-pump bar: 3,0...3,6 Residual: pressure 1/min: 2000 1/min: 550 2nd speed Speed Del.quantity : - 1000H.: 0,0...7,0 Supply-pump pressure bar: 6,3...6,9 Arrangement of drivers on engine-Overflow quantity at overflow valve: speed lever for exhaust-gas-1/min: 500 1st speed recirculation valve linkage (guage) Oveflow : 41...83 cm3/10s: (26...98) 1/min: 2300 quantity 1st speed 1/min: 1125 Del.quantity cm3/: 17,0..19,0 1000H.: -2nd speed

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Automatic starting fuel delivery:
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```
1st speed 1/min: 200
Del.quantity cm3/: -
ind. 1000H: 40,0
```

2nd speed 1/min: 300 Del.quantity cm3/: ax. 1000H: 35,0

## Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

## Mounting and assembly dimensions:

Designation

MS mm : 3,2...3,4

KF mm : 5,7...6,0

MS mm : 1,3..1,55

SVS max. mm : 
XK mm : 17,0...19,0

XL mm : 14,2...17,6

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-90-180-270 Tolerance + - : 0.00 (1.00) : MB 2.0 P10 : 25.8.87 Test sheet Edition Superceeded BASIC SETTING Calibrating oil : ISO 4113 1/mi: 1000 1st speed : 0 400 074 923 Combination no. Contr.-rod trav.mm: 12,00...12,10 Injection pump Pump designation : PES4M50C320RS103-1 Del.guantity cm3/: 3,1...3,2 EP type number : 0 410 054 025 100H.: (3,0...3,3) Governor Governor design. : RSF375/2200M19-1 Governer no. : 0 420 021 065 Dispersion cm3/: 0,25 100H.: (0,3) Customer-spec. information Customer : DAIMLER-BENZ 1/min: 375 2nd speed Contr.-rod trav. m: 6,2...6,4 Del.quantity cm3/: 0,6...0,7 : 0M615 -2.0L Engine 100H.: (0,5...0,9) 1st version kW : 46.0 cm3/: 0.1 100H.: (0.15) Dispersion TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. °C FULL-LOAD DELIV. AT FULL-LOAD STOP : 38...42 1st version Overflow valve 1/min: 1000 Speed : 1 417 413 012 Del.quantity cm3/: 31,0...32,0 1000H: (30,0...33,0) cm3/: 2,5 1000H: (3,0) Inlet press., bar : 1.00 Dispersion Calibrating nozzle-holder : 0 681 343 009 assembly HIGHEST RATED SPEED 1st version Opening Control-lever position degrees: 50...0
3rd c-rod trav.mm: 7,30...7,70 pressure, bar : 172...175 1/min : 0...2400 1/min : 2950 Test inj. tubing : 1 680 750 014 4th speed C-rod trav.mm : 0,00...1,00 Outside diameter x Wall thickness SET IDLE CONTROL-LEVER x Length mm : 6,00x2,00x600 POSITION 1/min : 1000 Speed (A) Injection pump setting values Contr.-rod trav.mm: 1,4...1,5 Insp. values in parentheses Set constant delivery quant. LOWEST RATED SPEED I per values Control-lever position degrees: 12...16 START OF DELIVERY Setting point w/out aux. spring Test pressure, bar: 30...32 1/min : 375 Contr.-rod trav.mm: 6.3 Prestroke mm : 1,70...1,80 : (1,65...1,85)
Contr.-rod trav.mm: 20,0 Testing: 1/min : 250 Speed Cam sequence : 1- 3- 4- 2 C-rod trav.mm min : 11,0

E03

1/min : 375 Speed C-rod trav.mm : 6,2...6,4 C-rod trav.mm : 2,0 1/min: 740...840 Speed 1/min : 1000 Speed C-rod trav.mm max: 1,50 SET IDLE AUXILIARY SPRING 1/min : 450 Speed Contr.-rod trav.mm: 4,80...5,00 (4,70...5,10) TORQUE CONTROL Torque-control curve - 1st version 1/min : 1000 1st speed : 12,00...12,10 C-rod trav.mm 2nd speed 1/min : 1800 C-rod trav.mm : 11,40...11,60 3rd speed 1/min : 2100 C-rod trav.mm : 10,90...11,10 FUEL-DELIVERY CHARACTERISTICS 1/min : 1800 Speed Del.quantity cm3/: 32,5...34,0 1000H.: (31,5...35,0) Dispersion cm3/: 2,50 1000H.: (3,00) Speed 1/min: 2100 Del.quantity cm3/: 31,5...33,5 1000H.: (30,5...34,5) cm3/: 2.50 1000H: (3,00) Dispersion STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/: 55,0...0.0 30H: (55,0...0.0) Contr.-rod trav.mm: 20,1...0,00 HIGH IDLE 1/min : 2400 Speed LOW IDLE 1/min : 375 Speed Contr.-rod trav.mm: 6,2...6,4 Del.quantity cm3/: 6.0...7.0 1000H.: (5,5...9,0) cm3/:1.00Dispersion 1000H.: (1,50) Remarks: CHECKING THE IDLE-SPEED AUXILIARY

**E04** 

SPRING CUTOFF
-Control-lever position 47°. No change in control-rod travel after switchover point up to 550 1/min, control-lever position 30°. Speed range 350 1/min...450 1/min.

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-90-180-270 Tolerance + - : 0.00 (1.00) Test\_sheet : MB 2,4 V4 : 26.06.87 Edition Superceeded BASIC SETTING Calibrating oil : ISO-4113 1st speed 1/mi: 1000 : 0 400 074 924 Combination no. Contr.-rod trav.mm: 13.40...13.50 Injection pump Pump designation : PES4M55C32ORS104-1 Del.quantity cm3/ : 3.7...3.8 EP type number : 0 410 054 963 100H.: (3.6...3.9) Governor Governor design. : RSF375/2200M12-1 Governer no. : 0 420 021 064 Dispersion cm3/:0.2100H.: (0.3) Customer-spec. information Customer : DB 2nd speed 1/min: 375.0 Contr.-rod trav. m: 6.4...6.6 Del.quantity cm3/: 0.6...0.7 100H.: (0.5...0.9) Dispersion cm3/: 0.1 Engine : 0M616 -2.4 l-1st version kW : 55.0 100H.: (0.15) TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. °C FULL-LOAD DELIV. AT FULL-LOAD STOP : 38...42 1st version Speed 1/min: 1000 Del.quantity cm3/: 37.0...38.0 Overflow valve : 1 417 413 012 1000H: (36.0...39.0) cm3/ : 2.50 1000H: (3.00) Inlet press., bar : 1.00 Dispersion Calibrating nozzle-holder : 0 681 343 009 assembly HIGHEST RATED SPEED 1st version Control-lever Opening position degrees: 50...0
3rd c-rod trav.mm: 7,40...7,80
Speed 1/min: 0...2400 pressure, bar : 172...175 1/min : 2950 Test inj. tubing : 1 680 750 014 4th speed C-rod trav.mm : 0.00...1.00 Outside diameter x Wall thickness SET IDLE CONTROL-LEVER POSITION : 6.00x2.00x600 x Length mm Speed 1/min : 1008 Contr.-rod trav.mm: 1,4...1.5 (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. LOWEST RATED SPEED I Control-lever per values position degrees: 8...12
Setting point w/out aux. spring
Speed 1/min: 375 START OF DELIVERY Test pressure, bar: 30...32 Contr.-rod trav.mm: 6.5 : 1.70...1.80 Prestroke mm : (1.65...1.85) Testing: Contr.-rod trav.mm: 20.00...0.00 Speed 1/min : 250 C-rod trav.mm min : 10.50 Cam sequence : 1- 3- 4- 2

E05

Speed 1/min : 375 C-rod trav.mm : 6.40...6.60 av.mm : 2.00 1/min : 750...850 1/min : 1000 C-rod trav.mm Speed Speed C-rod trav.mm max: 1.50 SET IDLE AUXILIARY SPRING 1/min : 450 Speed Contr.-rod trav.mm: 5.1...5.3 : (5,0...5,4) TORQUE CONTROL Torque-control curve - 1st version 1/min : 1000 1st speed C-rod trav.mm : 13.40...13.50 1/min: 1600 2nd speed C-rod trav.mm : 12.90...13.10 3rd speed 1/min : 2100 C-rod trav.mm : 12.20...12.40 FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 1600
Del.quantity cm3/: 38.0...39.5
1000H: (37.0...41.5)
Dispersion cm3/: 2.50 1000H.: (3.00) 1/min : 2100 Speed Del.quantity cm3/: 36.5...38.5 1000H: (35.5...39.5) Dispersion cm3/: 2.50 1000H:: 3.00 STARTING FUEL DELIVERY HIGH IDLE Speed 1/min : 2400 Contr.-rod trav.mm: 7.40...7.80
Del.quantity cm3/: 15.0...19.0
1000H.: (14.0...20.0)
Dispersion cm3/: 2.50
1000H.: (3.00) LOW IDLE 1/min : 375 Speed Contr.-rod trav.mm: 6.40...6.60 Del.quantity cm3/: 6.0...7.0 1000H: (5.5...9.0) Dispersion cm3/: 1.00 1000H.: (1.50) Remarks:

CHECKING THE IDLE-SPEED AUXILIARY

**E06** 

SPRING CUTOFF
-Control-lever position 47°. No change in control-rod travel after switchover point up to 550 1/min, control-lever position 30°. Speed range 350 1/min...450 1/min.

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-90-180-270 Tolerance + - : 0.50 (0.75) : MB 2.4 V3 : 15.05.87 Test sheet Edition Superceeded BASIC SETTING Calibrating oil : ISO-4113 1st speed 1/mi: 1000 : 0 400 074 925 Combination no. Contr.-rod trav.mm: 13.20...13.30 Injection pump Pump designation : PES4M55C32ORS107-1 Del.quantity cm3/ : 3.7...3.8 EP type number : 0 410 054 977 100H.: (3.6...3.9) Governor Governor design. : RSF375/2200M18-2 Governer no. cm3/:0.2: 0 420 021 058 Dispersion Customer-spec. information 100H.: (0.3) Customer : DB 1/min: 375.0 2nd speed Contr.-rod trav. m: 6.5...6.7

Del.quantity cm3/: 0.6...0.7

100H.: (0.5...0.9)

Dispersion cm3/: 0.1 : 0M616 Engine 1st version kW : 50.0 TEST BENCH REQUIREMENTS 100H.: (0.15) FULL-LOAD DELIV. AT FULL-LOAD STOP Calibrating-oil inlet temp. OC : 38...42 1st version Speed 1/min: 1000
Del.quantity cm3/: 37.0..38.0
1000H: (36.0..39.0)
Dispersion cm3/: 2.50
1000H: (3.00) Overflow valve : 1 417 413 012 Inlet press., bar : 1.00 Calibrating nozzle-holder : 0 681 343 009 assembly HIGHEST RATED SPEED 1st version Control-lever Opening pressure, bar : 172...175 position degrees: 50...0
3rd c-rod trav.mm: 8,20...8,60 1/min : 0...2500 1/min : 2950 Speed Test inj. tubing : 1 680 750 014 4th speed C-rod trav.mm : 0.00...1.00 Outside diameter x Wall thickness SET IDLE CONTROL-LEVER : 6.00x2.00x600 POSITION x Length mm 1/min: 1000 (A) Injection pump setting values Contr.-rod trav.mm: 1,90...2,00 Insp. values in parentheses Set constant delivery quant. LOWEST RATED SPEED I Control-lever per values position degrees: 9...13 START OF DELIVERY Setting point w/out aux. spring Speed Test pressure, bar: 30...32 1/min : 375 Contr.-rod trav.mm: 6.6 : 2.20...2.30 Prestroke mm : (2.15...2.35) Testing: Contr.-rod trav.mm: 18.50...21.50 1/min : 250 Speed C-rod trav.mm min : 11.00 Cam sequence : 1- 3- 4- 2

E07

Speed 1/min : 375 C-rod trav.mm : 6.50...6.70 : 2.50 C-rod trav.mm 1/min: 700...800 Speed 1/min: 1000 Speed C-rod trav.mm max: 2.00 SET IDLE AUXILIARY SPRING 1/min : 450 Speed Contr.-rod trav.mm: 4,80...5,00 : (4.70...5.10) TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min: 1000 C-rod trav.mm : 13.20...13.30 2nd speed 1/min : 1800 C-rod trav.mm : 12.60...12.80 3rd speed :1/min : 2200 C-rod tray.mm : 12.10...12.30 FUEL-DELIVERY CHARACTERISTICS 1/min : 1800 Speed Del.quantity cm3/: 38.0...40.0 1000H.: (37.0...41.0) Dispersion cm3/: 2.50 1000H.: (3.00) Speed 1/min: 2200 Del.quantity cm3/: 38.0...40.0 1000H.: (37.0...41.0) cm3/: 2.50 1000H.: 3.00 Dispersion STARTING FUEL DELIVERY 1/min : 190 Speed Del.quantity cm3/: 53.0...0.0 1000H.: (53.0...0.0) Contr.-rod trav.mm: 20.30...0.00 HIGH IDLE 1/min : 2500 Speed Contr.-rod trav.mm: 8.20...8.60 Del.quantity cm3/: 20.0...24.0 1000H.: (19.0...25.0) Dispersion cm3/: 2.50 1000H.: (3.00) LOW IDLE 1/min : 375 Speed Contr.-rod trav.mm: 6.50...6.70 Del.quantity cm3/: 6.0...7.0 1000H:: (5.5...9.0) Dispersion cm3/: 1.00 1000H:: (1.50) Remarks:

CHECKING THE IDLE-SPEED AUXILIARY

E03

SPRING CUTOFF
-Control-lever position 47°. No change in control-rod travel after switchover point up to 550 1/min, control-lever position 30°. Speed range 350 1/min...450 1/min.

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

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BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                         SD ang. spacing ^{0}CS: 0-90-180-270 Tolerance + - ^{0} : 0.00 (1.00)
Test sheet
                     : MB 2.0 P11
: 25.8.87
Edition
Superceeded
                                                          SD mark cyl. no. : 1
Calibrating oil : ISO 4113
                                                         BASIC SETTING
Combination no.
                     : 0 400 074 926
                                                          1st speed
                                                                          1/mi: 1000
Injection pump
Pump designation : PES4M55C32DRS161
                                                          Contr.-rod trav.mm: 11_3...11_4
EP type number : 0 410 054 964
                                                         Del.quantity cm3/: 3,10...3,20
Governor
Governor design. : RSF375/2300M56-3
Governer no.
                                                                         100H.: (3,00...3,30)
                    : 0 420 021 056
Customer-spec. information
                                                                         cm3/:0,25
                                                         Dispersion
Customer
                     : DB
                                                                         100H.: (0,30)
                     : 0M601-LVP
Engine
                                                         2nd speed
                                                                         1/min: 375
                                                         Contr.-rod trav. m: 5,2...5,4
1st version kW
                    : 53.0
                                                         Del.quantity cm3/: 0.5...0.6
100H: (0.4...0.9)
Dispersion cm3/: 0.1
100H: (0.15)
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                      : 38...42
                                                         FULL-LOAD DELIV. AT FULL-LOAD STOP
Overflow valve
                      : 1 469 990 351
                                                         1st version
                                                         Speed
                                                                         1/min: 1000
                                                         Del.quantity cm3/: 31,0...32,0
Inlet press., bar : 1.00
                                                                       1000H: (30,0...33,0)
cm3/: 2,5
1000H: (3,0)
Calibrating nozzle-holder
                                                         Dispersion
                    : 0 681 343 009
 assembly
Opening
                                                         HIGHEST RATED SPEED
 pressure, bar : 172...175
                                                         1st version
                                                         Control-lever
                                                         position degrees: 50...0

3rd c-rod trav.mm: 7.10...7.50
Speed 1/min: 0.0...2500
Test inj. tubing : 1 680 750 014
                                                                       1/min : 2950
Outside diameter
                                                          4th speed
                                                            C-rod trav.mm : 0,0...1.0
x Wall thickness
x Length mm
                     : 6,00X2,00X600
                                                         SET IDLE CONTROL-LEVER
                                                         POSITION
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                                       1/min : 1000
                                                         Speed
                                                         Contr.-rod trav.mm: 1,9...2,0
    per values
                                                         LOWEST RATED SPEED I
START OF DELIVERY
                                                         Control-lever
                                                          position degrees: 13...17
Test pressure, bar: 30...32
                                                         Setting point w/out aux. spring
Prestroke mm : 1,50...1,60
: (1,45...1,65)
Contr.-rod trav.mm: 20,00...22,00
Cam sequence : 1-3-4-2-
                                                                      1/min : 375
                                                         Contr.-rod trav.mm: 5.3
                                                         Testing:
E09
```

1/min : 250 Speed C-rod trav.mm min: 10.0 Speed 1/min: 375 C-rod trav.mm : 5,20...5,40 SET IDLE AUXILIARY SPRING 1/min : 400 Speed Contr.-rod trav.mm: 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque-control curve - 1st version 1/min : 1000 1st speed C-rod trav.mm : 11,3...11,4 2nd speed 1/min : 1800 C-rod trav.mm : 10,9...11,1 3rd speed 1/min : 2250 C-rod trav.mm : 10,3...10,5 compensator (LDA,ADA,ALDA) 1st version Setting 1/min : 1000 Speed Pressure hPa : 930 Contr.-rod trav.mm: 0,10...0,50 Measurement 1/min: 1000 Speed 1st pressure hPa : 840 C-rod trav.mm : 1,10...1,30 2nd pressure hPa : 700 : 2,30...2,70 C-rod trav.mm FUEL-DELIVERY CHARACTERISTICS 1/min : 1800 Speed Speed 1/min: 1800
Del.quantity cm3/: 34,0...35,5
1000H.: (33,0...36,5)
Dispersion cm3/: 2,50
1000H.: (3,00)
Speed 1/min: 2250
Del.quantity cm3/: 32,0...34,0
1000H.: (31,0...35,0)
Dispersion cm3/: 2,50
1000H.: (3,00) STARTING FUEL DELIVERY Speed 1/min: 100 Del.quantity cm3/: 55.0 1000H.: (55.0) Contr.-rod trav.mm; 20,1 HIGH IDLE Speed 1/min : 2500

Contr.-rod trav.mm: 7,10...7,50

Del.quantity cm3/: 16,0...20,0 1000H.: (15,0...21,0) Dispersion cm3/: 2,50 1000H.: (3,00)

LOW IDLE

Speed 1/min: 375 Contr.-rod trav.mm: 5,2...5,4 Del.quantity cm3/: 5,0...6,0 1000H: (4,5...9,0) Dispersion cm3/: 1,00

1000H.: (1,50)

Start-of-delivery spacing (difference) between max/min value 1° cam angle maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

START-OF-DELIVERY ADJUSTMENT -Start-of delivery adjustment and lock after start-of-delivery mean value of all cylinders, 18.3...18.70 (18.2...18.8°) angular displacement of the cam after cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-72-144-216-288 Tolerance + - : 0.00 (1.00) : MB 2,5 F7 : 25.8.87 Test sheet Edition Superceeded SD mark cyl. no. : 1 Calibrating oil : ISO 4113 BASIC SETTING : 0 400 075 967 Combination no. 1st speed 1/mi: 1000 Injection pump Pump designation : PES5M55C32ORS153 Contr.-rod trav.mm: 11,3...11,4 : 0 410 055 991 EP type number Del.quantity cm3/: 3,1...3,2 Governor Governor design. : RSF340/2300M59-18 Governer no. : 0 420 021 078 100H.: (3,0...3,3) Dispersion Customer-spec. information cm3/:0,25Customer : DB 100H.: (0,30) Engine : 0M602 2nd speed 1/min: 315 Contr.-rod trav. m: 5,4...5,6 Del.quantity cm3/: 0,5...0,6 100H.: (0,45...0,90) 1st version kW : 66.0 TEST BENCH REQUIREMENTS cm3/: 0.10Dispersion Calibrating-oil inlet temp. °C 100H.: (0,15) : 38...42 FULL-LOAD DELIV. AT FULL-LOAD STOP Overflow valve : 1 469 990 351 1st version 1/min: 1000 Speed Del.quantity cm3/: 31.5...32.5 1000H:: (30.5...33.5) Dispersion cm3/: 2.50 1000H:: (3,00) Inlet press., bar : 1.00 Calibrating nozzle-holder : 0 681 343 009 assembly Opening HIGHEST RATED SPEED pressure, bar : 172...175 1st version Control-lever position degrees: 50...0 3rd c-rod trav.mm : 7,8...8,2 Test inj. tubing : 1 680 750 014 Speed 1/min: 0...2500 th speed 1/min: 2950 C-rod trav.mm: 0,00...1,00 Outside diameter x Wall thickness 4th speed x Length mm : 6.00x2.00x600 SET IDLE CONTROL-LEVER POSITION (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. 1/min: 1000 Contr.-rod trav.mm: 0,9...1,0 per values LOWEST RATED SPEED I Control-lever START OF DELIVERY Test pressure, bar: 30...32 position degrees: 13...17 Setting point w/out aux. spring Prestroke mm : 2,00...2,10 : (1,95...2,15)
Contr.-rod trav.mm: 20,00...22,00 1/min : 315 Contra-rod trav.mm: 5.5 Cam sequence : 1- 2- 4- 5- 3-Testing: E11

1/min : 220 Speed C-rod trav.mm min : 8.0 1/min : 315 Speed C-rod trav.mm : 5,4...5,6 mm : 1.5 1/min : 630...730 C-rod trav.mm Speed Speed 1/min: 1000 C-rod trav.mm max: 1.0 SET IDLE AUXILIARY SPRING Speed 1/min : 380 Contr.-rod trav.mm: 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque-control curve - 1st version 1/min : 1000 iv.mm : 11,3...11,4 1st speed C-rod trav.mm 2nd speed 1/min: 1800 G-rod trav.mm : 10,9...11,1 3rd speed 1/min : 2200 C-rod trav.mm : 10,6...10,8 FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 1800
Del.quantity cm3/: 34,0...35,5
1000H.: (33,0...36,5)
Dispersion cm3/: 2,50
1000H.: (3,00)
Speed 1/min: 2200 Del.quantity cm3/: 33,5...35,5 1000H.: (32,5...36,5) cm3/: 2.50 1000H.: (3.00) Dispersion STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/: 55.0 1000H:: (55.0) Contr.-rod trav.mm: 20.1 HIGH IDLE Speed 1/min: 2500 Contr.-rod trav.mm: 7.8...8.2 Del.quantity cm3/: 22.0...26.0 1000H.: (21,0...27,0) cm3/: 2.5 1000H.: (3,0) Dispersion LOW IDLE Del.quantity cm3/: 5,0...6,0 1000H.: (4.5...9,0) cm3/: 1.0 1000H.: (1,5) Dispersion

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) Control lever at idle stop 1/min : 340 Speed Contr.-rod trav.mm: (12,6...14,0) Del.quantity cm3/: (33,0...41,0) Electric current A: 1,8 Control lever at full-load stop 1/min: 2950 Speed Contr.-rod trav.mm: 0.0...1.0 Electric current short-duration A: 3,0 Starting test Speed 1/min : 100 Del.quantity cm3/: - min. 1000H.: 55,0 Remarks: SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 10 cam angle maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-72-144-216-288 Tolerance + - : 0.00 (1.00) Test sheet : MB 2,5 F8 : 26.8.87 Edition Superceeded SD mark cyl. no. : 1 Calibrating oil : ISO 4113 BASIC SETTING Combination no. : 0 400 075 974 1st speed 1/mi: 1000 Injection pump Pump designation : PESSM55C32ORS162 EP type number : 0 410 055 983 Contr.-rod trav.mm: 11,3...11,4 Governor Del.quantity cm3/: 3,1...3,2 Governor design. : RSF340/2300M60-5 Governer no. 100H.: (3,0...3,3) : 0 420 021 063 cm3/:0,25Customer-spec. information Dispersion Customer : DB 100H.: (0,30) : 0M602-LVP MJ:86 Engine 2nd speed 1/min: 315 Contr.-rod trav. m: 5,2...5,4 Del.quantity cm3/: 0,5...0,6 1st version kW : 66.0 TEST BENCH REQUIREMENTS 100H.: (0,45...0,9) cm3/: 0,10 Dispersion Calibrating-oil inlet temp. C 100H.: (0,15) : 38...42 FULL-LOAD DELIV. AT FULL-LOAD STOP Overflow valve : 1 469 990 351 1st version 1/min: 1000 Speed Del.quantity cm3/: 31,0...32,0 Inlet press., bar: 1.00 1000H.: (30,0...33,0) cm3/: 2,50 1000H.: (3,00) Calibrating nozzle-holder Dispersion : 0 681 343 009 assembly HIGHEST RATED SPEED Opening pressure, bar : 172...175 1st version Control-lever position degrees: 50...0 3rd c-rod trav.mm : 7,1...7,5 Test inj. tubing : 1 680 750 014 1/min : 0...2500 Speed th speed 1/min: 2950 C-rod trav.mm: 0,0...1,0 Outside diameter 4th speed x Wall thickness x Length mm : 6.00x2.00x600 SET IDLE CONTROL-LEVER POSITION (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. 1/min: 1000 Speed Contr.-rod trav.mm: 1,9...2,0 per values LOWEST RATED SPEED I START OF DELIVERY Control-lever Test pressure, bar: 30...32 position degrees: 13...17 Setting point w/out aux. spring : 1,70...1,80 1/min : 315 Prestroke mm : (1,65...1,85) Contr.-rod trav.mm: 5.3 Contr.-rod trav.mm: 20,00...22,00 Cam sequence : 1-2-4-5-3 Testing:

E13

1/min : 220 Speed HIGH IDLE C-rod trav.mm min: 7,5 1/min : 2500 Speed Contr.-rod trav.mm: 7,1...7,5
Del.quantity cm3/: 16,0...20,0
1000H.: (15,0...21,0)
Dispersion cm3/: 2,5
1000H.: (3,0) 1/min : 315 Speed nm : 5,2...5,4 nm : 2,5 1/min : 530...630 1/min : 1000 C-rod trav.mm C-rod trav.mm Speed Speed C-rod trav.mm max: 2.0 LOW IDLE SET IDLE AUXILIARY SPRING 1/min : 380 Speed Speed 1/min : 315 Contr.-rod trav.mm: 5,2...5,4

Del.quantity cm3/: 5,0...6,0

1000H: (4,5...9,0)

Dispersion cm3/: 1,0 Contr.-rod trav.mm: 3,9...4,1 : (3,8...4,2) TORQUE CONTROL Torque-control curve - 1st version 1000H.: (1.5) 1/min : 1000 1st speed G-rod trav.mm : 11,3...11,4 SETTING/TESTING ELECTRONIC IDLE 2nd speed 1/min: 1600 REGULATION (ELR) C-rod trav.mm : 10,9...11,1 3rd speed 1/min: 2250 Control lever at idle stop Speed 1/min: 340 Contr.-rod trav.mm: (12,5...13,9) : 10,3...10,5 C-rod trav.mm Del.quantity cm3/: -1000H.: (33,0...41,0) compensator (LDA,ADA,ALDA) Electric current A: 1,8 Control lever at full-load stop 1st version Setting 1/min : 2950 Speed 1/min: 1000 Contr.-rod trav.mm: 0.0...1.0 Speed Pressure hPa : 930 Electric current Contr.-rod trav.mm: 0,1...0,5 short-duration A: 3.0 Starting test Measurement Speed 1/min : 100 Del.quantity cm3/: - min. 1000H.: 55,0 Speed 1/min : 1000 1st pressure hPa : 840 C-rod trav.mm : 1,1...1,3 **Hemarks:** 2nd pressure hPa : 700 CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF : 2,3...2,7 C-rod trav.mm -Control-lever position 49°, max.
0.2 mm control-rod travel deduction FUEL-DELIVERY CHARACTERISTICS allowable after switchover point (of 1/min : 1600 Del.quantity cm3/: 34,0...35,0 1000H:: (33,0...36,5) starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be Dispersion cm3/: 2.5 1000H.: (3.0) Speed 1/min: 2250 Del.quantity cm3/: 32.0...34.0 1000H.: (31.0...35.0) greater than 0.2 mm after switchover point (of starting cam). cm3/: 2.5 1000H.: (3,0) TESTING PNEUMATIC SHUTOFF DEVICE Dispersion -Control lever at idle stop. With n = 315 1/min. and pu = 450 mbar, control rod must move quickly to STARTING FUEL DELIVERY control-rod travel = 0 mm 1/min : 100 START-OF-DELIVERY ADJUSTMENT Speed Del.quantity cm3/: 55.0 -Start-of delivery adjustment and lock after start-of-delivery mean value of all cylinders, 17.3...17.70 (17.2...17.80) angular displacement of 1000H.: (55.0) Contr.-rod trav.mm: 20.1 E14

the cam after cylinder 1. E15

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet Edition Superceeded : MB 3,0 W20 : 03.04.87

Calibrating oil : ISO-4113

: 0 400 076 973 Combination no.

Injection pump

Pump designation : PES6M55C32ORS165 EP type number : 0 410 056 990

Governor

Governor design. : RSF315/2300M66-2 Governer no. : 0 420 021 099

Customer-spec. information Customer : DB

: 0M603-3.0 Engine

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar : 1.00

Calibrating nozzle-holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values \_\_\_\_

START OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Contr.-rod trav.mm: 20.00...22.00 Cam sequence : 1-5- 3- 6- 2-

Speed 1/min: 220 C-rod trav.mm min: 7.00 Speed 1/min: 290 Speed SD ang. spacing  $^{0}$ CS: 0-60-120-180-240-300 Tolerance + -  $^{0}$ : 0.00 (1.00) C-rod trav.mm : 5.40...5.60 : 1.50 C-rod trav.mm 1/min : 620...720 1/min : 1000 Speed Speed SD mark cyl. no. : 1 C-rod trav.mm max: 1.00 BASIC SETTING SET IDLE AUXILIARY SPRING 1st speed 1/mi: 1000 1/min : 360 Speed Contr.-rod trav.mm: 4,20...4,40 Contr.-rod trav.mm: 11.30...11.40 : (4,10...4,50) Del.quantity cm3/: 3.1...3.2 TORQUE CONTROL Torque-control curve - 1st version 100H.: (3.0...3.3) 1st speed 1/min : 1000 C-rod trav.mm : 11.30...11.40 2nd speed 1/min : 1800 C-rod trav.mm : 10.90...11.10 3rd speed 1/min : 2200 cm3/: 0.2 Dispersion 100H.: (0.3) C-rod tray.mm : 10.60...10.80 1/min: 290.0 2nd speed Contr.-rod trav. m: 5.4...5.6 compensator (LDA, ADA, ALDA) Del.quantity cm3/: 0.5...0.6 100H: (0.5...0.9) cm3/: 0.1 100H.: (0.15) 1st version Dispersion Setting Speed 1/min: 1000 Pressure hPa : 930 FULL-LOAD DELIV. AT FULL-LOAD STOP Contr.-rod trav.mm: 0.10...0.50 1st version 1/min: 1000 Speed Measurement Del.quantity cm3/: 31.5...32.5 1000H.: (30.5...33.5) Dispersion cm3/: 2.50 1000H.: (3.00) 1/min: 1000 Speed 1st pressure hPa : 840 C-rod trav.mm : 1.10...1.30 2nd pressure hPa : 700 HIGHEST RATED SPEED C-rod trav.mm : 2.30...2.70 1st version Control-lever FUEL-DELIVERY CHARACTERISTICS FUEL-DELIVERY CHARACTERISTICS
Speed 1/min: 1800
Del.quantity cm3/: 34.0...35.5
1000H.: (33.0...36.5)
Dispersion cm3/: 2.50
1000H.: (3.00)
Speed 1/min: 2200
Del.quantity cm3/: 33.5...35.5
1000H.: (32.5...36.5)
Dispersion cm3/: 2.50
1000H.: 3.00 position degrees: 50...0

3rd c-rod trav.mm: 7,80...8,20

Speed 1/min: 0...2500

4th speed 1/min: 2950 C-rod trav.mm : 0.00...1.00 SET IDLE CONTROL-LEVER POSITION 1/min : 1000 Speed Contr.-rod trav.mm: 0,9...1,0 STARTING FUEL DELIVERY LOWEST RATED SPEED I Control-lever position degrees: 13...17 Setting point w/out aux. spring 1/min : 100 Speed Del.quantity cm3/: 55.0...0.0 1000H:: (55.0...0.0) Contr.-rod trav.mm: 20.10...0.00 1/min : 290 Speed Contr.-rod trav.mm: 5.5 Testing: E17

HIGH IDLE Speed 1/min: 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000N.: (21.0...27.0) Dispersion cm3/: 2.50 1000H.: (3.00) LOW IDLE Speed 1/min: 290 Contr.-rod trav.mm: 5.40...5.60 Del.quantity cm3/: 5.5...6.5 1000H.: (5.0...9.5) cm3/: 1.00 Dispersion 1000H.: (1.50) SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) Control lever at idle stop Speed 1/min : 315 Contr.-rod trav.mm: (12,6...14,0) Del.quantity cm3/: (32,0...40,0) 1000H.: -Electric current A: 1,8 Control lever at full-load stop

Del.quantity cm3/: (32,0...40,0 1000H.: Electric current A: 1,8
Control lever at full-load stop
Speed 1/min: 2950
Contr.-rod trav.mm: 0,0...1,0
Electric current
short-duration A: 3,0
Starting test
Speed 1/min: 100
Del.quantity cm3/: min. 1000H.: 55,0

Remarks: SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 10 cam angle maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 290 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

ADJUSTING ACTIVE JOLT DAMPING (ARD) Control lever at full-load stop. With n= 1000 1/min., I = 2.5 A, control-rod-travel reduction = 2.25...2.55 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.00 (1.00) : MB 3.0 W19 : 21.08.87 Test sheet Edition Superceeded SD mark cyl. no. : 1 Calibrating oil : ISO-4113 BASIC SETTING : 0 400 076 977 Combination no. 1st speed 1/mi: 800 Injection pump Pump designation : PES6M55C32ORS165 Contr.-rod trav.mm: 12.70...12.80 EP type number : 0 410 056 990 Del.quantity cm3/: 3.0...3.1 Governor Governor design. Governer no. : RSF315/2300M60-7 : 0 420 021 092 100H.: (2.9...3.2) Customer-spec. information cm3/:0.2Dispersion Customer : DB 100H.: (0.3) Engine : OM603-3.0: MJ:88 1/min: 290.0 2nd speed Contr.-rod trav. m: 6.9...7.1 Del.quantity cm3/: 0.5...0.6 100H.: (0.5...0.9) 1st version kW : 75.0 TEST BENCH REQUIREMENTS cm3/:0.1Dispersion Calibrating-oil inlet temp. OC 100H.: (0.15) : 38 . . . 42 FULL-LOAD DELIV. AT FULL-LOAD STOP Overflow valve : 1 469 990 351 1st version 1/min: 800 Speed Charge press. hPa : 1100
Del.quantity cm3/: 30.5...31.5
1900H.: (29.5...32.5)
Dispersion cm3/: 2.50 Inlet press., bar : 1.00 Calibrating nozzle-holder : 0 681 343 009 assembly 1000H.: (3.00) Opening pressure, bar : 172...175 HIGHEST RATED SPEED 1st version Control-lever Test inj. tubing : 1 680 750 014 position degrees: 0...50 3rd c-rod trav.mm : 9,20...9,60 Outside diameter 1/min: 0...2500 Speed x Wall thickness 4th speed 1/min : 2950 : 6.00x2.00x600 x Length mm C-rod trav.mm : 0.00...1.00 (A) Injection pump setting values SET IDLE CONTROL-LEVER Insp. values in parentheses Set constant delivery quant. POSITION 1/min : 800 Speed per values Contr.-rod trav.mm: 1,9...2,0 START OF DELIVERY LOWEST RATED SPEED I Test pressure, bar: 30...32 Control-lever position degrees: 12...16 : 2.00...2.10 Setting point w/out aux. spring Speed 1/min: 290 Prestroke mm : (1.95...2.15) Contr.-rod trav.mm: 20.00...22.00 Cam sequence : 1-5-3-6-2-4 Contr.-rod trav.mm: 7.0 E19

Testing: 1/min : 100 Speed Del.quantity cm3/ : 52.0...0.0 Speed 1/min : 220 1000H.: (52.0...0.0) C-rod trav.mm min: 7.00 Contr.-rod tray.mm: 20.10...0.00 1/min : 290 Speed C-rod trav.mm : 6.90 ... 7.10 m : 2.50 1/min : 630...730 C-rod trav.mm HIGH IDLE Speed 1/min : 800 Speed 1st version C-rod trav.mm max: 2.00 Charge press. hPa : 1100 1/min : 2500 SET IDLE AUXILIARY SPRING Contr.-rod trav.mm: 9.20...9.60 Del.quantity cm3/: 22.0...26.0 1000H.: (21.0...27.0) Dispersion cm3/: 2.50 1000H.: (3.00) Speed 1/min : 360 Contr.-rod trav.mm: 5,60...5,80 (5,50...5,90) TORQUE CONTROL Torque-control curve - 1st version LOW IDLE 1/min : 800 1st speed : 12.70...12.80 C-rod trav.mm Speed 1/min : 290 1/min : 1600 Contr.-rod trav.mm: 6.90...7.10 2nd speed Del.quantity cm3/: 5.5...6.5 1000H.: (5.0...9.5) : 12.00...12.20 C-rod trav.mm 3rd speed 1/min : 2200 cm3/: 1.00 1000H.: (1.50) C-rod trav.mm : 11.40...11.60 Dispersion compensator (LDA\_ADA\_ALDA) SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) 1st version Setting Control lever at idle stop 1/min: 800 Speed 1/min : 315 Pressure hPa : 950 Contr.-rod trav.mm: (13,0...14,4) Del.quantity cm3/: (30,0...38,0) Measurement Electric current A: 1,8 1/min: 800 Speed Control lever at full-load stop 1st pressure hPa : 900 1/min : 2950 C-rod trav.mm : 0.50...0.70 Contr.-rod trav.mm: 0,0...1,0 : 750 2nd pressure hPa Electric current : 1.80...2.20 C-rod trav.mm short-duration A: 3,0 Starting test FUEL-DELIVERY CHARACTERISTICS 1/min : 100 Speed Del.quantity cm3/: -min. 1000H.: 52,0 1st version Charge press. hPa : 1100 Remarks: 1/min : 1600 SETTING OF FBG Del.quantity cm3/ : 31.5...33.0 -Setting and locking of FBG according 1000H.: (30.5,..34.0) to start-of-delivery average of all cylinders 19.3...19.70 (19.2...19.80). cm3/: 2.50 1000H.: (3.00) Dispersion Cam angle according to cyl. 1. Charge press. hPa : 1100 Speed 1/min : 2200 Del.quantity cm3/ : 32.0...34.0 1000H.: (31.0...35.0) cm3/: 2,50 Dispersion 1000H.: 3.00 Start-of-delivery spacing (difference) between max/min value 10 cam angle STARTING FUEL DELIVERY maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 3- 2 Note inst. in remarks column Test sheet Edition Superceeded : KHD 1 G 27 : 12.06.87 : 30.3.87 SD ang. spacing  $^{\circ}$  CS: 0-120-240 Tolerance + - : 0.50 (0.75) Calibrating oil : ISO-4113 SD mark cyl. no. : 1 : 0 400 463 153 Combination no. BASIC SETTING Injection pump Pump designation : PES3A80D410/3RS1350 1/mi: 1250 1st speed EP type number : 0 410 483 023 Contr.-rod trav.mm: 10.10...10.20 Governor Governor design. : RSV325...1250A2C2168 Del.quantity cm3/ : 5.7...5.8 -3L Governer no. : 0 420 232 475 100H.: (5.6...6.0) Customer-spec. information cm3/:0.2Customer : KHD Dispersion Engine : F3L912 100H.: (0.3) 2nd speed 1/min: 325.0 Contr.-rod trav. m: 6.8...7.0 Del.quantity cm3/: 1.0...1.6 1st version kW : 40.0 1/min: 2500 Speed 100H: (0.8..1.7) cm3/: 0.2 100H: (0.3) TEST BENCH REQUIREMENTS Dispersion Calibrating-oil inlet temp. °C : 38 ... 42 SLEEVE POSITION Overflow valve Control-lever position Degree: -3 : 1 417 413 000 17min: 800 Inlet press., bar : 1.00 Cont.-rod travelmm: 0.30...0.70 Calibrating nozzle-holder Governor-spring reload : 0 681 343 009 assembly Notch setting x : 3.00 FULL-LOAD DELIV. AT FULL-LOAD STOP Opening pressure, bar : 172...175 1st version Speed 1/min: 1250 Del.quantity cm3/: 57.5...58.5 1000H.: (56.0...60.0) Dispersion cm3/: 2.50 1000H.: (3.50) Test in i. tubing : 1 680 750 014 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm HIGHEST RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set constant delivery quant. Control-lever position degrees: 41...49 per values Testing: START OF DELIVERY 1st c-rod trav.mm: 9.10 Speed 1/min: 1290...1300 Test pressure, bar: 25...27 2nd c-rod trav.mm : 4.00 Speed 1/min: 1315...1345 Prestroke mm : 1.90...2.00 3rd c-rod trav.mm: 4.00 : (1.85...2.05) E22

```
1/min: 1330...1360
  Speed
            1/min : 1500
4th speed
                  : 0.30...1.40
  C-rod trav.mm
LOWEST RATED SPEED I
Control-lever
 position degrees: 12...20
Setting point w/out aux. spring
           1/min : 325
Speed
Contr.-rod trav.mm: 5.5
Testing:
Speed
            1/min : 100
C-rod trav.mm min: 19.50
Speed 1/min: 325
                 : 5.90...6.10
C-rod trav.mm
                  : 2.00
C-rod trav.mm
            1/min : 455...515
Speed
TORQUE CONTROL
Torque-control curve - 1st version
          1/min : 1250
1st speed
                 : 10.10...10.20
  C-rod trav.mm
          1/min : 500
2nd speed
  C-rod trav.mm : 10.90...11.00
4th speed 1/min: 1025
  C-rod trav.mm : 10.50...10.70
FUEL-DELIVERY CHARACTERISTICS
Speed
            1/min : 800
Del.quantity cm3/: 54.0...56.0
            1000H.: (52.0...58.0)
             cm3/: 2.00
Dispersion
            1000H.: (-)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 9.10
            1/min : 1290...1300
Speed
STARTING FUEL DELIVERY
            1/min : 100
Speed
Del.quantity cm3/: 130.0...140.0
            1000H.: (127.0...143.0)
Contr.-rod trav.mm: 19.50...21.00
Remarks:
                  : TKS2.50
APPLICATION
Tractor (tractor engines)
```

BOSCH INJ. PUMP TEST SPECIFICATIONS Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 3- 4- 2 Note inst. in remarks column Test sheet Edition Superceeded : KHD 1 G 25 26.06.87 20.10.86 SD ang. spacing  $^{\circ}$  CS: 0-90-180-270 Tolerance + -  $^{\circ}$  : 0.50 (0.75) Calibrating oil : ISO-4113 BASIC SETTING Combination no. : 0 400 464 132 1/mi: 1175 1st speed Injection pump Contr.-rod trav.mm: 10.10...10.20 Pump designation : PES4A80D410/3RS1349 EP type number : 0 410 484 021 Del.quantity cm3/ : 5.7...5.8 Governor Governor design. : RSV325...1175A8C0657 100H.: (5.6...6.0) ~3L Governer no. : 0 420 232 469 cm3/:0.2Dispersion Customer-spec. information 100H.: (0.4) Customer Engine : F4L912 2nd spied 1/min: 325.0 Contr.-rod trav. m: 6.7...6.9

Del.quantity cm3/: 1.0...1.6

100H.: (0.8...1.7)

Dispersion cm3/: 0.2 1st version kW : 51.0 1/min: 2350 Speed TEST BENCH REQUIREMENTS 100H.: (0.3) Calibrating-oil inlet temp. °C SLEEVE POSITION : 38...42 Control-lever position Degree: -3 1/min: 800 Overflow valve : 1 417 413 000 Cont.-rod travelmm: 0.30...0.70 Governor-spring reload Inlet press., bar : 1.00 Notch setting x : 4.00 Calibrating nozzle-holder : 0 681 343 009 FULL-LOAD DELIV. AT FULL-LOAD STOP assembly Opening 1st version Speed 1/min: 1175
Del.quantity cm3/: 57.5...58.5
1000H.: (56.0...60.0)
Dispersion cm3/: 2.50
1000H.: (4.00) pressure, bar : 172...175 Test inj. tubing : 1 680 750 014 Outside diameter x Wall thickness HIGHEST RATED SPEED : 6.00x2.00x600 x Length mm 1st version Control-lever (A) Injection pump setting values position degrees: 52...60 Insp. values in parentheses Set constant delivery quant. Testing: 1st c-rod trav.mm: 9.10 per values \_\_\_\_ Speed 1/min: 1215...1225 START OF DELIVERY 2nd c-rod trav.mm : 4.00 Speed 1/min: 1245...1275 3rd c-rod trav.mm: 4.00 Test pressure, bar: 25...27 Speed 1/min: 1250...1280 4th speed 1/min: 1420 Prestroke mm : 1.90...2.00 : (1.85...2.05)

£24

```
C-rod trav.mm : 0.30...1.40
LOWEST RATED SPEED I
Control-lever
 position degrees: 16...24
Setting point w/out aux. spring
Speed `
           1/min : 325
Contr.-rod trav.mm: 5.5
Testing:
            1/min : 100
Speed
C-rod trav.mm min : 19.50
          1/min : 325
v.mm : 5.90...6.10
Speed
C-rod trav.mm
                 : 2.00
C-rod trav.mm
           1/min: 450...510
Speed
TORQUE CONTROL
Torque-control curve - 1st version
          1/min : 1175
ist speed
  C-rod trav.mm : 10.10...10.20
2nd speed 1/min: 500
  C-rod trav.mm : 11.00...11.10
4th speed 1/min: 900
  C-rod trav.mm : 10.50...10.70
FUEL-DELIVERY CHARACTERISTICS
            1/min : 800
Speed
Del.quantity cm3/ : 54.5...56.5
            1000H.: (52.5...58.5)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 9.10
Speed
           1/min : 1215...1225
STARTING FUEL DELIVERY
            1/min : 100
Speed
Del.quantity cm3/: 135.0...145.0
            1000H.: (132.0...148.0)
Contr.~rod trav.mm: 19.50...21.00
Remarks:
                  : DX3.70
APPLICATION
Tractor (tractor engines)
```

BOSCH INJ. PUMP TEST SPECIFICATIONS Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 3- 4- 2 Note inst. in remarks column Test sheet : KHD 1 G 28 SD ang. spacing CS: 0-90-180-270 Tolerance + - : 0.50 (0.75) : 26.06.87 Edition Superceeded Calibrating oil : ISO-4113 BASIC SETTING Combination no. : 0 400 464 133 1/mi: 1175 1st speed Injection pump Pump designation : PES4A80D410/3RS1349 Contr.-rod trav.mm: 10.10...10.20 EP type number : 0 410 484 021 Governor Del.quantity cm3/ : 5.7...5.8 Governor design. : RSV325...1175A8C2163 100H.: (5.6...6.0) -4L : 0 420 232 476 Governer no. Dispersion cm3/:0.2Customer-spec. information 100H.: (0.4) Customer : KHD : F4L912 1/min: 325.0 Engine 2nd speed Contr.-rod trav. m: 6.7...6.9 1st version kW : 51.0 Del.quantity cm3/: 1.0...1.6 100H.: (0.8...1.7) cm3/: 0.2 1/min: 2350 Speed Dispersion TEST BENCH REQUIREMENTS 100H.: (0.3) Calibrating-oil inlet temp. °C SLEEVE POSITION : 38...42 Control-lever position Degree: -3 1/min: 800 Overflow valve Cont.-rod travelmm: 0.30...0.70 : 1 417 413 000 Governor-spring reload Inlet press., bar : 1.00 Notch setting x : 4.00 Calibrating nozzle-holder : 0 681 343 009 FULL-LOAD DELIV. AT FULL-LOAD STOP assembly 1st version Opening pressure, bar : 172...175 1/min: 1175 Speed Del.quantity cm3/: 57.5...58.5 1000H.: (56.0...60.0) cm3/ : 2.50 1000H.: (4.00) Test ini. tubing : 1 680 750 014 Dispersion Outside diameter x Wall thickness HIGHEST RATED SPEED : 6.00x2.00x600 x Length mm 1st version Control-lever (A) Injection pump setting values position degrees: 52...60 Insp. values in parentheses Set constant delivery quant. Testing: per values \_\_\_\_ 1st c-rod trav.mm : 9.10 Speed 1/min: 1215...1225 2nd c-rod trav.mm: 4.00 START OF DELIVERY Speed 1/min : 1245...1275 Test pressure, bar: 25...27 3rd c-rod trav.mm: 4.00 : 1.90...2.00 1/min: 1250...1280 Speed Prestroke mm : (1.85...2.05) 4th speed 1/min: 1420

**E26** 

```
C-rod trav.mm : 0.30...1.40
LOWEST RATED SPEED I
Control-lever
 position degrees: 16...24
Setting point W/out aux. spring
Speed 1/min: 325
Contr.-rod trav.mm: 5.5
Testing:
            1/min : 100
Speed
C-rod trav.mm min : 19.50
            1/min : 325
mm : 5.90...6.10
mm : 2.00
Speed
C-rod trav.mm
C-rod trav.mm
           1/min: 450...510
Speed
TORQUE CONTROL
Torque-control curve - 1st version
           1/min : 1175
1st speed
  C-rod trav.mm : 10.10...10.20
2nd speed 1/min: 500
  C-rod trav.mm : 11.00...11.10
4th speed 1/min: 900
  C-rod trav.mm : 10.50...10.70
FUEL-DELIVERY CHARACTERISTICS
           1/min : 800
Speed
Del.quantity cm3/: 55.0...57.0
            1000H.: (53.0...59.0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 9.10
Speed
           1/min : 1215...1225
STARTING FUEL DELIVERY
            1/min : 100
Speed
Del.quantity cm3/: 135.0...145.0
            1000H.: (132.0...148.0)
Contr.-rod trav.mm: 19.50...21.00
Remarks:
                  : TK$2.70
APPLICATION
Tractor (tractor engines)
```

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                        : 1- 4- 9- 8- 5- 2-
                                                     Cam sequence
                                                                          11- 10- 3- 6- 7- 12
Note inst. in remarks column
Test sheet
                   : KHD 19.0 K1
: 28.08.87
                                                     SD ang. spacing CS: 0-15-60-75-120-135-
Edition
Superceeded
                                                                          180-195-240-255-300-
Calibrating oil : ISO-4145
                                                                          315
                                                     Tolerance + - 0
                                                                        : 0.50 (0.75)
Combination no.
                   : 0 400 640 104
                                                     SD mark cyl. no. : 1
Injection pump
Pump designation : PE12A95D610LS2453
                                                     BASIC SETTING
EP type number : 0 410 690 998
Governor
                                                     1st speed
                                                                    1/mi: 1250
Governor design. : RQV300...1250AB1083L
                                                     Contr.-rod trav.mm: 10.00...10.10
Governer no. : 0 420 212 111
Customer-spec. information
                                                     Del.guantity cm3/: 8.7...8.9
Customer
                   : KHD
                                                                   100H.: (8.5...9.1)
                   : F12L413F
Engine
                                                                   cm3/:0.3
                                                     Dispersion
1st version kW : 261.0
Speed
              1/min: 2500
                                                                   100H.: (0.6)
                                                     2nd speed 1/min: 300.0 Contr.-rod trav. m: 7.0...7.2
TEST BENCH REQUIREMENTS
                                                    Del.quantity cm3/: 1.7...2.2
100H.: (1.4...2.4)
Dispersion cm3/: 0.3
100H.: (0.5)
Calibrating-oil inlet temp. °C
                   : 38...42
Overflow valve
                   : 1 417 413 000
                                                     SLEEVE POSITION
                                                     Control-lever position
Inlet press., bar : 1.00
                                                                 Degree: -1
                                                                  17min: 1250
Calibrating nozzle-holder
                  : 0 681 343 009
                                                     Cont.-rod travelmm: 15.20...17.80
 assembly
Opening
                                                    FULL-LOAD DELIV. AT FULL-LOAD STOP
 pressure, bar : 172...175
                                                     1st version
                                                                   1/min: 1250
                                                     Speed
                                                    Del.quantity cm3/: 87.0...89.0
Test inj. tubing : 1 680 750 014
                                                                  1000H.: (85.0...91.0)
                                                                 cm3/ : 3.00
1000H.: (6.00)
Outside diameter
                                                    Dispersion
x Wall thickness
                : 6.00x2.00x600
x Length mm
                                                    HIGHEST RATED SPEED
(A) Injection pump setting values
                                                    1st version
    Insp. values in parentheses
                                                    Control-lever
    Set constant delivery quant.
                                                     position degrees: 59...67
    per values ____
                                                    Testing:
                                                    1st c-rod trav.mm : 9.00
Speed 1/min : 1290...1300
2nd c-rod trav.mm : 4.00
START OF DELIVERY
Test pressure, bar: 25...27
                                                      Speed 1/min: 1350...1380
                   : 2.00...2.10
Prestroke mm
                   : (1.95...2.15)
                                                                 1/min : 1500
                                                     4th speed
Contr.-rod trav.mm: 9.00...12.00
                                                      C-rod trav.mm : 0.00...1.00
E28
```

```
LOWEST RATED SPEED I
Control-lever
 position degrees: 7...15
Testing:
Speed 1/min: 100
C-rod trav.mm min: 7.50
             1/min : 300
Speed
                  : 5.90...6.10
C-rod trav.mm
                   : 2.00
C-rod trav.mm
             1/min: 585...615
Speed
CONSTANT REGULATION
             1/min: 330...400
Speed
TORQUE CONTROL
Torque-control curve - 1st version
1st speed 1/min : 1250
  C-rod trav.mm : 10.00...10.10
2nd speed 1/min: 800
C-rod trav.mm : 10.40...10.50
3rd speed 1/min : 1025
C-rod trav.mm : 10.20...10.40
SWITCH-OVER POINT
             1/min : 220 (240)
Speed
FUEL-DELIVERY CHARACTERISTICS
Speed 1/min: 800
Del.quantity cm3/: 88.5...91.5
1000H.: (86.0...94.0)
Speed 1/min: 1000
Del.quantity
Del.quantity cm3/: 85.5...88.5
             1000H.: (83.0...91.0)
SETTING CONTROL-ROD STOP
Speed
             1/min : 600
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 9.00
Speed
            1/min : 1290...1300
STARTING FUEL DELIVERY
LOW IDLE
         1/min : 300
Speed
```

F01

Contr.-rod trav.mm: 7.00...7.20
Del.quantity cm3/: 17.0...22.0
1000H.: (14.5...24.5)
Dispersion cm3/: 3.00

1000H.: (5.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 9,6 : Edition : 24.07.87 Superceeded : 12.9.86 Calibrating oil : ISO-4113 : KHD 9,6 I 2

Combination no. : 0 400 646 275

Injection pump

Pump designation : PE6A95D410LS2621 EP type number : 0 410 696 982

Governor

Governor design. : RQ300/1250AB1148-1L Governer no. : 0 420 200 104

Customer-spec. information Customer : KHD

Engine : F6L413F

1st version kW : 141.0 Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. OC : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values \_\_\_\_

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10 : (1.95...2.15)

Contr.-rod trav.mm: 9.00...12.00

```
: 1-6-5-4-3-2
Cam sequence
SD ang. spacing CS: 0-75-120-195-240-315
Tolerance + - : 0.50 (0.75)
SD mark cyl. no. : 1
BASIC SETTING
               1/mi: 1250
1st speed
Contr.-rod trav.mm: 10.40...10.50
Del.quantity cm3/: 9.2...9.4
              100H.: (9.0...9.6)
Dispersion
              cm3/:0.3
              100H.: (0.6)
              1/min: 300.0
2nd speed
Contr.-rod trav. m: 6.4...6.6
Del.quantity cm3/: 0.8...1.4
100H.: (0.5...1.6)
              cm3/: 0.3
100H.: (0.5)
Dispersion
SLEEVE POSITION
Control-lever position
             Degree: -2
Speed
              17min: 600
Cont.-rod travelmm: 19.20...20.80
FULL-LOAD DELIV. AT FULL-LOAD STOP
1st version
Speed
              1/min: 1250
Del.quantity cm3/: 92.0...94.0
1000H.: (90.0...96.0)
             cm3/ : 3.50
1000H.: (6.00)
Dispersion
HIGHEST RATED SPEED
Setting point:
Speed
           1/min : 600
Contr.~rod trav.mm: 20.0
Testing:
1st c-rod trav.mm : 9.40
  Speed 1/min: 1295...1310
2nd c-rod trav.mm : 4.00
             1/min : 1325...1355
  Speed
LOWEST RATED SPEED I
Setting point w/out aux. spring
Speed
            1/min : 300
```

F03

Contra-rod trav.mm: 6.5 Testing: Speed 1/min: 100 C-rod trav.mm min: 7.90 1/min : 300 Speed : 6.40...6.60 C-rod trav.mm : 2.00 C-rod trav.mm 1/min : 340...380 Speed TORQUE CONTROL Dimension a mm : 0.17 Torque-control curve - 1st version 1st speed 1/min : 1250 C-rod trav.mm : 10.40...10.50 1/min: 600 2nd speed C-rod trav.mm : 10.90...11.00 3rd speed 1/min: 915 C-rod trav.mm : 10.70...10.90 4th speed 1/min: 980 C-rod trav.mm : 10.40...10.60 FUEL-DELIVERY CHARACTERISTICS 1/min : 650 Speed Del.quantity cm3/: 91.5...94.5 1000H.: (89.0...97.0) SETTING CONTROL-ROD STOP Speed 1/min : 650 ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 9.40 1/min: 1295...1310 Speed STARTING FUEL DELIVERY

Remarks:

```
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 5- 3- 6- 2- 4
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
Test sheet
                    : HAN 10,8 J
                                                      SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
                    : 28.08.87
Edition
Superceeded
Calibrating oil : ISO-4113
                                                      SD mark cyl. no. : 1
Combination no.
                    : 0 400 676 188
                                                      BASIC SETTING
Injection pump
Pump designation
                   : PE6A95D32ORS2557
                                                                    1/mi: 1075
                                                      1st speed
EP type number
                    : 0 410 696 986
                                                      Contr.-rod tray.mm: 9.70...9.80
Governor
                    : RSV350...1075A8C2226
Governor design.
                                                      Del.quantity cm3/ : 7.9...8.1
                    : 0 420 233 210
Governer no.
                                                                     100H.: (7.7...8.3)
Customer-spec. information
                                                                    cm3/:0.3
Customer
                   : HANOMAG
                                                      Dispersion
                    : D964 E
                                                                     100H.: (0.6)
Engine
1st version kW : 106.0
                                                                     1/min: 350.0
                                                      2nd speed
              1/min: 2150
                                                      Contr.-rod trav. m: 6.6...6.8
Speed
                                                      Del.quantity cm3/: 0.9...1.5
100H.: (0.6...1.7)
Dispersion cm3/: 0.3
100H.: (0.5)
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                    : 38...42
                                                      SLEEVE POSITION
Overflow valve
                                                      Control-lever position
                    : 1 417 413 000
                                                                   Degree: -3
                                                                    17min: 800
                                                      Cont.-rod travelmm: 0.30...0.70
Inlet press., bar : 1.00
Calibrating nozzle-holder
                                                      Governor-spring reload
             : 0 681 343 909
 assembly
                                                      Notch setting x : 5.50
                                                      FULL-LOAD DELIV. AT FULL-LOAD STOP
Opening
 pressure, bar : 172...175
                                                      1st version
                                                      Speed 1/min: 1075
Del.quantity cm3/: 79.5...81.5
1000H.: (77.5...83.5)
Dispersion cm3/: 3.50
Test inj. tubing : 1 680 750 003
Outside diameter
x Wall thickness
                                                                   1000H.: (6,00)
                    : 6,00x2,00x600
x Length mm
                                                      HIGHEST RATED SPEED
(A) Injection pump setting values
                                                      1st version
    Insp. values in parentheses
Set constant delivery quant.
                                                      Control-lever
                                                       position degrees: 50...58
    per values
                                                      Testing:
                                                      1st c-rod trav.mm : 8.70
START OF DELIVERY
                                                                  1/min : 1115...1125
                                                        Speed
Test pressure, bar: 25...27
                                                      2nd c-rod trav.mm : 4.00
                                                                  1/min : 1145...1175
Prestroke mm
                   : 2.15...2.25
                                                        Speed
                    : (2.10...2.30)
                                                      3rd c-rod trav.mm : 4.00
F05
```

```
1/min : 1160...1190
  Speed
4th speed
              1/min : 1325
  C-rod trav.mm : 0.30...1.40
LOWEST RATED SPEED I
Control-lever
 position degrees: 20...28
Setting point W/out aux. spring Speed 1/min: 350 Contr.-rod trav.mm: 5.5
Testing:
              1/min: 100
Speed
C-rod trav.mm min: 19.50
          1/min : 350
Speed
                 : 5.90...6.10
: 2.00
C-rod trav.mm
C-rod trav.mm
              1/min: 490...550
Speed
TORQUE CONTROL
Torque-control curve - 1st version
1st speed 1/min: 1075
  C-rod trav.mm : 9.70...9.80
2nd speed 1/min: 500
C-rod trav.mm : 10.80...10.90
4th speed 1/min : 855
  C-rod trav.mm : 10.20...10.40
FUEL-DELIVERY CHARACTERISTICS
Speed 1/min: 500
Del.quantity cm3/: 79.0...82.0
1000H.: (76.5...84.5)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 8.70
Speed
              1/min : 1115...1125
STARTING FUEL DELIVERY
              1/min : 100
Speed
Del.quantity cm3/: 120.0...130.0
1000H.: (117.0...133.0)
Contr.-rod trav.mm: 19.50...21.00
Remarks:
APPLICATION
Excavator
```

BOSCH INJ. PUMP TEST SPECIFICATIONS Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 3- 4- 2 Note inst. in remarks column Test sheet : MB 4.0 A : 24.07.87 SD ang. spacing  $^{\circ}$  CS: 0-90-180-270 Tolerance + -  $^{\circ}$  : 0.50 (0.75) Edition : 9.3.87 Superceeded Calibrating oil : ISO-4113 BASIC SETTING Combination no. : 0 400 844 083 1st speed 1/mi: 1400 Injection pump Pump designation : PES4A90D410RS2666 Contr.-rod trav.mm: 10.90...11.00 EP type number : 0 410 894 029 Del.quantity cm3/: 6.3...6.4 Governor : RQV300...1400AB1065-Governor design. 100H.: (6.1...6.6) SL Governer no. : 0 420 212 169 Dispersion cm3/:0.3Customer-spec. information 100H.: (0.5) Customer : DAIMLER-BENZ 2nd speed 1/min: 300.0 Contr.-rod trav. m: 8.6...8.8 Del.quantity cm3/: 0.8...1.2 100H:: (0.6...1.4) Engine : 0M364 1st version kW : 66.0 1/min: 2800 Speed cm3/:0.2Dispersion 100H.: (0.4) TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. °C (B) Setting of injection pump with externally-mounted governor : 38...42 Overflow valve SLEEVE TRAVELS : 1 417 413 000 1st speed 1/min: 300 Sleeve travel mm: 0.80...1.30 2nd speed 1/min: 500 Inlet press., bar : 1.50 Sleeve travel mm: 2.30...2.80 3rd speed 1/min: 750 Calibrating nozzle-holder Sleeve travel mm: 4.10...4.30 : 0 681 343 009 assembly 4th speed 1/min: 1500 Sleeve travel mm: 8.50...8.60 Opening pressure, bar : 172...175 SLEEVE POSITION Control-lever position Test inj. tubing : 1 680 750 015 Degree: -1 17min: 1500 Speed Cont.-rod travelmm: 15.20...17.80 Outside diameter x Wall thickness FULL-LOAD DELIV. AT FULL-LOAD STOP : 6.00x1.50x600 x Length mm (A) Injection pump setting values 1st version Insp. values in parentheses Set constant delivery quant. Speed 1/min: 1400 Del.quantity cm3/: 63.0...64.0 1000H.: (61.0...66.0) cm3/: 3.00 per values Dispersion START OF DELIVERY 1000H.: (5.00) Test pressure, bar: 25...27 HIGHEST RATED SPEED Prestroke mm : 2.25...2.35 1st version : (2.20...2.40)

F07

Control-lever position degrees: 58...66 Testing: 1st c-rod trav.mm : 9.90 Speed 1/min: 1450...1460 2nd c-rod trav.mm : 4.00 Speed 1/min: 1560...1590 4th speed 1/min: 1630 C-rod trav.mm: 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 20...28 Testing: Speed 1/min : 100 C-rod trav.mm min: 10.29 00د : 1/min Speed C-rod trav.mm : 8.60...8.80 C-rod trav.mm : 2.00 CONSTANT REGULATION 1/min : 540...680 Speed TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min: 1400 C-rod trav.mm : 10.90...11.00 2nd speed 1/min: 630 C-rod trav.mm : 12.20...12.30 3rd speed 1/min: 900 C-rod trav.mm : 11.50...11.70 SWITCH-OVER POINT 1/min : 220 (240) Speed FUEL-DELIVERY CHARACTERISTICS 1/min : 630 Speed Del.quantity cm3/: 55.5...58.5 1000H: (53.0...61.0) Speed 1/min: 900 Del.quantity cm3/ : 54.5...57.5 1000H.: (52.0...60.0) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 9.90 Speed 1/min : 1450...1460 MIDDLE RATED SPEED Contr.-rod trav.mm: 4.00

Speed 1/min: 100
Del.quantity cm3/: 78.0...88.0
1000H.: (75.0...91.0)
Contr.-rod trav.mm: 17.00...17.40

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

STARTING FUEL DELIVERY

BOSCH INJ. PUMP TEST SPECIFICATIONS Cam sequence : 1- 3- 4- 2 Note inst. in remarks column Test sheet Edition Superceeded SD ang. spacing  $^{0}$ CS: 0-90-180-270 Tolerance + -  $^{0}$ : 0.50 (0.75) : LIE 5,6 B : 28.08.87 : 13.5.87 Calibratino oil : ISO-4113 START OF DELIVERY DIFFERENCE : 0 400 844 085 betw.c-rod trav.mm: 9.00...12.00 Difference CS : 4.00...5.00 Combination no. Injection pump Pump designation : PES4A100D410RS2686 BASIC SETTING : 0 410 804 001 EP type number Governor 1st speed 1/mi: 1000 Governor design. : RQV400...1000AB1203L Governer no. : 0 420 212 177 Contr.-rod trav.mm: 12.50...12.60 Customer-spec. information Del.quantity cm3/: 12.1...12.3 Customer : LIEBHERR 100H.: (11.9...12.5) : D904T Engine Dispersion cm3/:0.31st version kW : 100.0 1/min: 2000 100H.: (0.6) Speed TEST BENCH REQUIREMENTS 2nd speed 1/min: 400.0 Contr.-rod trav. m: 7.4...7.6 Calibrating-oil inlet temp. C Del.quantity cm3/: 1.5...2.1 100H.: (1.2...2.3) : 40 ... 45 cm3/:0.3Dispersion 100H.: (0.5) Overflow valve : 1 417 413 000 (B) Setting of injection pump with Inlet press., bar: 1.50 externally-mounted governor Calibrating nozzle-holder SLEEVE TRAVELS : 0 681 343 009 1st speed 1/min: 435 assembly Sleeve travel mm: 2.10...2.30 2nd speed 1/min: 500
Sleeve travel mm: 3.00...3.40
3rd speed 1/min: 1040
Sleeve travel mm: 8.10...8.20 Opening pressure, bar : 172...175 4th speed 1/min: 1135 Test inj. tubing : 1 680 750 008 Sleeve travel mm: 9.20...9.70 Outside diameter x Wall thickness SLEEVE POSITION : 6.00x2.00x600 x Length mm Control-lever position Degree: 1 1/min: 1000 (A) Injection pump setting values Speed Insp. values in parentheses Cont.-rod travelmm: 15.20...17.80 Set constant delivery quant. FULL-LOAD DELIV. AT FULL-LOAD STOP per values START OF DELIVERY 1st version 1/min: 1000 Test pressure, bar: 25...27 Speed Charge press. hPa: 800
Del.quantity cm3/: 121.5...123.5
1000H.: (119.5...125.5) Prestroke mm : 2.70...2.80 : (2.65...2.85) Contr.-rod trav.mm: 9.00...12.00

F<sub>0</sub>9

Dispersion cm3/ : 3.50 1000H.: (6.00) HIGHEST RATED SPEED 1st version Control-lever position degrees: 58...66 Testing: 1st c-rod trav.mm : 11.50 1/min : 1040...1050 Speed 2nd c-rod trav.mm : 4.00 Speed 1/min: 1125...1155 th speed 1/min: 1250 C-rod trav.mm: 0.00...1.00 4th speed LOWEST RATED SPEED I Control-lever position degrees: 9...17 Testing: 1/min : 100 Speed C-rod trav.mm min : 9.00 Speed 1/min: 400 C-rod trav.mm : 7.40...7.60 CONSTANT REGULATION 1/min: 425...530 Speed TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1000 C-rod trav.mm : 12.50...12.60 2nd speed 1/min: 500 C-rod trav.mm : 13.80...13.90 4th speed 1/min: 860 C-rod trav.mm : 13.30...13.50 5th speed 1/min : 920 C-rod trav.mm : 12.90...13.10 compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 500 Speed hPa : 800 Pressure Contr.-rod trav.mm: 13.80...13.90 Measurement 1/min : 500 Speed 1st pressure hPa : -: 12.70...12.80 C-rod trav.mm 2nd pressure hPa : 655 C-rod trav.mm : 13.60...13.70 : 610 3rd pressure hPa : 13.00...13.20 C-rod trav.mm SWITCH-OVER POINT

Speed 1/min : 320 (340) FUEL-DELIVERY CHARACTERISTICS Charge press. hPa : 800 Speed 1/min: 650 Del.quantity cm3/: 133.5...136.5 1000H.: (131.0...139.0) Charge press. hPa : -1/min : 500 Speed Del.quantity cm3/: 104.0...107.0 1000H.: (102.0...109.0) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 11.50 1/min : 1040...1050 Speed STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/: 113.0...123.0 1000H.: (110.0...126.0) Contr.-rod trav.mm: 19.50...21.00 LOW IDLE 1/min : 400 Speed

Contr.-rod trav.mm: 7.40...7.60

Del.quantity cm3/: 15.0...21.0

1000H.: (12.5...23.5)

Dispersion cm3/: 3.50

1000H.: (5.50)

Note inst. in remarks column

Test sheet Edition Superceeded : MB 5,7 I 5 : 26.06.87 : 10.84 Calibrating oil : ISO-4113

: 0 400 846 242 Combination no.

Injection pump

Pump designation : PES6A80D41ORS2085Y

EP type number : 0 410 886 044

Governor

Governor design. : RQV300...1475AB622DL

Governer no. : 0 420 214 097

Customer-spec. information

Customer : DAIMLER-BENZ

1/min: 2950 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. OC

: 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values

START OF DELIVERY

Test pressure, bar: 25...27

: 2.15...2.25 Prestroke mm

: (2.10...2.30)

Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1-5-3-6-2-4

SD ang. spacing CS: C Tolerance + - : C	0-60-120-180-240-300   0.50 (0.75)	1st c-rod trav.mm : 7.20 Speed 1/min : 15051515
BASIC SETTING	1	2nd c-rod trav.mm : 4.00 Speed 1/min : 15601590 4th speed 1/min : 1700
1st speed 1/mi: 1	1450	C-rod trav.mm : 0.001.00
Contrrod trav.mm: 8	3.208.30	LOWEST RATED SPEED I Control-lever
Del.quantity cm3/: 4	•	position degrees: 1018
100H.:	(4.44.8)	Testing: Speed 1/min : 100
Dispersion cm3/: 0	0.2	C-rod trav.mm min : 8.10 Speed 1/min : 300
100H.:	(0.3)	C-rod trav.mm : 6.506.70
2nd speed 1/min: 3 Contrrod trav. m: 6 Del.quantity cm3/: 1 100H.: 6 Dispersion cm3/: 0	300.0 5.56.7 1.21.6 (1.01.7)	CONSTANT REGULATION Speed 1/min: 380500  TORQUE CONTROL Dimension a mm : 1.00 Torque-control curve - 1st version
(B) Setting of inject externally-mounte	tion pump with	1st speed 1/min : 1450 C-rod trav.mm : 8.208.30 2nd speed 1/min : 500 C-rod trav.mm : 9.209.30
SLEEVE TRAVELS  1st speed 1/min: 1  Sleeve travel mm: 8  2nd speed 1/min: 9  Sleeve travel mm: 5	3.408.60 950 5.205.50	3rd speed 1/min: 800 C-rod trav.mm: 8.909.10 4th speed 1/min: 1000 C-rod trav.mm: 8.603.90
3rd speed 1/min: 7 Sleeve travel mm: 4 4th speed 1/min: 5	4.104.60 I	SWITCH-OVER POINT Speed 1/min : 220 (240)
Sleeve travel mm: 2 5th speed 1/min: 3 Sleeve travel mm: 0	300	FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 500 Del.quantity cm3/: 41.044.0
SLEEVE POSITION Control-lever positio Degree: - Speed 1/min: 1 Controd travelmm: 1	-1 i 1420 !	1009H:: (39.046.0)  Speed 1/min: 800  Del.quantity cm3/: 45.547.5  1000H:: (44.049.0)  Speed 1/min: 1000
FULL-LOAD DELIV. AT F	1	Del.quantity cm3/: 46.048.0 1000H.: (44.050.0)
1st version Speed 1/min: 1 Del.quantity cm3/: 4 1000H.: ( Dispersion cm3/: 2 1000H.: (	(6.047.0   1 (44.548.5)   1 2.00   1	ROTATIONAL-SPEED LIMITATION  1st version 1mm control-rod travel less than  full-load trav.mm: 7.20
HIGHEST RATED SPEED 1st version Control-lever position degrees: 5 Testing: F12	5664 i	Speed       1/min : 15051515         MIDDLE RATED SPEED       Contrrod trav.mm: 7.20         Speed       1/min : 13201330         Contrrod trav.mm: 4.00       Speed         Speed       1/min : 13601390

## STARTING FUEL DELIVERY

Speed 1/min: 100
Del.quantity cm3/: 78.0...88.0
1000H.: (75.0...91.0)
Contr.-rod trav.mm: 13.70...14.10

Note inst. in remarks column

Test sheet Edition Superceeded : MAN 7,0 C 1 : 28.08.87

Calibrating oil : ISO-4113

: 0 400 846 264 Combination no.

Injection pump

Pump designation : PES6A85D32ORS2337 : 0 410 886 921

EP type number

Governor Governor design. : RQ200/1250AB801DR

Governer no. : 0 420 203 089

Customer-spec. information Customer : MAN

: D0846HM42U Engine

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Calibrating nozzle-holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values \_\_\_\_

START OF DELIVERY

Test pressure, bar: 25...27

: 1.50...1.60 Prestroke mm

: (1.45...1.65)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2-

SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) SD mark cyl. no. : 6 BASIC SETTING 1/mi: 1250 1st speed Contr.-rod trav.mm: 10.70...10.80 Del.quantity cm3/ : 7.0...7.1 100H.: (6.8...7.3) Dispersion cm3/: 0.3100H.: (0.4) 1/min: 200.0 2nd speed Contr.-rod trav. m: 8.4...8.6 Del.quantity cm3/: 1.8...2.4 100H.: (1.6...2.6) Dispersion cm3/:-100H.: (0.4) SLEEVE POSITION Control-lever position Degree: -2 1/min: 550 Cont.-rod travelmm: 19.20...20.80 FULL-LOAD DELIV. AT FULL-LOAD STOP 1st version Speed 1/min: 1250 Del.quantity cm3/: 70.0...71.0 1000H.: (68.0...73.0) cm3/: 3.00 Dispersion 1000H.: (4.50) HIGHEST RATED SPEED Setting point: 1/min : 550 Contr.-rod trav.mm: 20.0 Testing: 1st c-rod trav.mm: 9.75 Speed 1/min: 1295...1310 2nd c-rod trav.mm: 4.00 1/min : 1335...1365 Speed LOWEST RATED SPEED I Setting point w/out aux. spring 1/min : 200 Speed Contr.-rod trav.mm: 8.5 Testing:

1/min : 100 Speed C-rod trav.mm min: 9.90 Speed 1/min: 200 C-rod trav.mm: 8.40...8.60 mm : 2.00 1/min : 340...380 C-rod trav.mm Speed TORQUE CONTROL Dimension a mm : 0.30 Torque-control curve - 1st version
1st speed 1/min: 1250
C-rod trav.mm: 10.70...10.80
2nd speed 1/min: 500
C-rod trav.mm: 11.40...11.50 4th speed 1/min: 1000 C-rod trav.mm : 11.10...11.30 5th speed 1/min: 1125 C-rod trav.mm : 10.80...11.00 FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 500 Del.quantity cm3/: 0.0...69.5 1000H.: (0.0...72.0) 1/min: 800 Speed Del.quantity cm3/: 69.0...72.0 1000H.: (66.5...74.5) SETTING CONTROL-ROD STOP Speed 1/min : 200 ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than

full-load trav.mm: 9.75 1/min: 1295...1310 Speed

STARTING FUEL DELIVERY

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BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                       Contr.-rod trav.mm: 9.00...12.00
                                                       Cam sequence : 1-5-3-6-2-4
Note inst. in remarks column
Test sheet
                    : MB 6.0 A
: 24.07.87
                                                       SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Edition
Superceeded
                    : 9.3.87
                  : ISO-4113
Calibrating oil
                                                       BASIC SETTING
                    : 0 400 846 522
Combination no.
                                                       1st speed
                                                                     1/mi: 1400
Injection pump
                                                       Contr.-rod trav.mm: 11.10...11.20
Pump designation
                    : PES6A90D410RS2667
EP type number
                    : 0 410 896 080
                                                       Del.quantity cm3/: 6.3...6.4
Governor
                   : RQV300...1400AB1065-
Governor design.
                                                                      100H.: (6.1...6.6)
                    : 0 420 212 168
Governer no.
                                                                      cm3/:0.3
                                                       Dispersion
Customer-spec. information
                                                                      100H.: (0.4)
Customer
                    : DAIMLER-BENZ
                                                                      1/min: 300.0
                    : OM 366
Engine
                                                       2nd speed
                                                       Contr.-rod trav. m: 8.9...9.1
Del.quantity cm3/: 0.9...1.3
1st version kW : 100.0
                                                                      100H: (0.7...1.5)
cm3/: 0.2
100H: (0.4)
              1/min: 2800
Speed
                                                       Dispersion
TEST BENCH REQUIREMENTS
                                                       (B) Setting of injection pump with externally-mounted governor
Calibrating-oil inlet temp. C
                    : 38...42
Overflow valve
                                                       SLEEVE TRAVELS
                                                       1st speed 1/min: 300
Sleeve travel mm: 0.80...1.30
                    : 1 417 413 000
                                                       2nd speed 1/min: 500
Sleeve travel mm: 2.30...2.80
3rd speed 1/min: 750
Inlet press., bar : 1.00
Calibrating nozzle-holder
             : 0 681 343 009
                                                         Sleeve travel mm: 4.10...4.30
 assembly
                                                       4th speed 1/min: 1500
                                                         Sleeve travel mm: 8.50...8.60
Opening
pressure, bar : 172...175
                                                       SLEEVE POSITION
                                                       Control-lever position
                                                                    Degree: -1
1/min: 1500
Test inj. tubing : 1 680 750 015
                                                       Cont.-rod travelmm: 15.20...17.80
Outside diameter
x Wall thickness
                                                       FULL-LOAD DELIV. AT FULL-LOAD STOP
                    : 6.00x1.50x600
x Length mm
(A) Injection pump setting values
                                                       1st version
                                                                      1/min: 1400
    Insp. values in parentheses
                                                       Speed
                                                       Del.quantity cm3/: 63.5...64.5
1000H.: (61.5...66.5)
Dispersion cm3/: 3.00
1000H.: (4.50)
    Set constant delivery quant.
    per values
START OF DELIVERY
Test pressure, bar: 25...27
                                                       HIGHEST RATED SPEED
                    : 2.25...2.35
                                                       1st version
Prestroke mm
                    : (2.20...2.40)
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F17

Control-lever position degrees: 61...69 Testing: 1st c-rod trav.mm : 10.10 Speed 1/min: 1460...1470 2nd c-rod trav.mm: 4.00 1/min: 1560...1590 Speed 4th speed 1/min: 1630 C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 21...29 Testing: 1/min : 100 Speed C-rod trav.mm min : 10.30 Speed 1/min: 300 : 8.90...9.10 C-rod trav.mm CONSTANT REGULATION Speed 1/min: 540...680 TORQUE CONTROL Torque-control curve - 1st version 1/min : 1400 1st speed C-rod trav.mm : 11.10...12.20 2nd speed 1/min: 500 C-rod trav.mm : 12.30...12.40 3rd speed 1/min : 900 C-rod trav.mm : i1.90...12.10 4th speed 1/min : 1100 C-rod trav.mm : 11.40...11.70 SWITCH-OVER POINT 1/min : 220 (240) Speed FUEL-DELIVERY CHARACTERISTICS 1/min : 500 Speed Del.quantity cm3/: 52.0...54.0 1000H.: (49.5...56.5) 1/min : 900 Speed Del.quantity cm3/: 55.0...58.0 1000H.: (52.5...60.5) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 10.10 1/min : 1460...1470 Speed STARTING FUEL DELIVERY 1/min : 100 Speed

Del.quantity cm3/: 78.0...88.0 1000H.: (75.0...91.0) Contr.-rod trav.mm: 17.00...17.40 Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

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BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                         SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)
Note inst. in remarks column
Test sheet
                     : VAU 5,4 A 1 : 24.07.87
                                                         START OF DELIVERY DIFFERENCE
Superceeded
                     : 1.86
                                                        betw.c-rod trav.mm: 10.00...11.00
Difference CS : 2.50...3.50
Calibrating oil : ISO-4113
Combination no.
                     : 0 400 846 533
                                                         BASIC SETTING
Injection pump
Pump designation : PES6A9SD32ORS2646
                                                         1st speed
                                                                         1/mi: 810
EP type number
                     : 0 410 896 923
                                                         Contr.-rod trav.mm: 9.70...9.80
Governor
                     : RQV300...1300AB1163-
Governor design.
                                                         Del.quantity cm3/: 6.3...6.5
                       1R
                     : 0 420 213 104
Governer no.
                                                                        100H.: (6.1...6.7)
Customer-spec. information
Customer
                                                                        cm3/:0.3
                    : VAUXHALL
                                                         Dispersion
Engine
                     : 330T/C
                                                                        100H.: (0.6)
TEST BENCH REQUIREMENTS
                                                                        1/min: 300.0
                                                         2nd speed
                                                        Contr.-rod trav. m: 5.9...6.1

Del.quantity cm3/: 0.8...1.4

100H.: (0.5...1.6)

Dispersion cm3/: 0.3

100H.: (0.5)
Calibrating-oil inlet temp. C
                     : 38...42
Overflow valve
                     : 1 417 413 000
                                                         (B) Setting of injection pump with
Inlet press., bar : 1.00
                                                             externally-mounted governor
                                                         SLEEVE TRAVELS
Calibrating nozzle-holder
                    : 0 681 343 009
                                                         1st speed 1/min: 275
Sleeve travel mm: 0.90...1.10
 assembly
                                                        2nd speed 1/min: 500
Opening
 pressure, bar : 172...175
                                                           Sleeve travel mm: 3.10...3.50
                                                         3rd speed 1/min: 1000
                                                           Sleeve trave! mm: 5.70...5.80
                                                         4th speed 1 min: 1300
Sleeve travel mm: 7.90...8.10
Test inj. tubing : 1 680 750 014
Outside diameter
x Wall thickness
                                                        SLEEVE POSITION
                : 6.00x2.00x600
x Length mm
                                                        Control-lever position
                                                                      Degree: -1
                                                                       17min: 1400
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                        Cont.-rod travelmm: 15.20...17.80
                                                        FULL-LOAD DELIV. AT FULL-LOAD STOP
    per values
START OF DELIVERY
                                                        1st version
Test pressure, bar: 25...27
                                                                       1/min: 810
                                                        Speed
                                                        Del.quantity cm3/: 63.5...65.5
                     : 2.50...2.60
                                                                      1000H.: (61.5...67.5) cm3/ : 3.50
Prestroke mm
                     : (2.45...2.65)
                                                        Dispersion
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1-5-3-6-2-4
                                                                      1000H.: (6.00)
                                                        HIGHEST RATED SPEED
F19
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```
1st version
Control-lever
 position degrees: 57...65
Testing:
1st c-rod trav.mm : 8.70
              1/min : 1350...1360
   Speed
2nd c-rod trav.mm : 4.00
  Speed 1/min: 1455...1485
th speed 1/min: 1600
C-rod trav.mm: 0.00...1.00
4th speed
LOWEST RATED SPEED I
Control-lever
 position degrees: 13...21
Testing:
Speed 1/min: 100
C-rod trav.mm min: 7.40
Speed 1/min: 300
                    : 5.90...6.10
C-rod trav.mm
CONSTANT REGULATION
               1/min: 350...490
Speed
SWITCH-OVER POINT
               1/min : 220 (240)
Speed
FUEL-DELIVERY CHARACTERISTICS
               1/min : 1200
Del.quantity cm3/: 71.5...74.5
1000H.: (69.5...76.5)

Speed 1/min: 500

Del.quantity cm3/: 52.0...55.0

1000H.: (50.0...57.0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 8.70
Speed
               1/min : 1350...1360
STARTING FUEL DELIVERY
Speed
               1/min : 100
Del.quantity cm3/: 97.0...107.0
1000H.: (94.0...110.0)
Contr.-rod trav.mm: 19.50...21.00
LOW IDLE
Speed
               1/min : 300
Contr.-rod trav.mm: 5.90...6.10
Remarks:
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F20

```
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 5- 3- 6- 2- 4
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
Test sheet
                    : FIA 5,9 A
                                                         SD ang. spacing ^{\circ} CS: 0-60-120-180-240-300 Tolerance + - ^{\circ} : 0.50 (0.75)
                    : 10.08.87
Edition
Superceeded
                    : 12.9.86
                  : ISO-4113
Calibrating oil
                                                         SD mark cyl. no. : 1
Combination no.
                    : 0 400 846 547
                                                        BASIC SETTING
Injection pump
Pump designation : PES6A90D410RS2713
                                                                      1/mi: 1350
                                                         1st speed
EP type number
                     : 0 410 896 083
                                                         Contr.-rod trav.mm: 11.70...11.80
Governor
Governor design.
                    : RQV300...1350AB1175-
                       11
                                                        Del.quantity cm3/: 6.8...6.9
                    : 0 420 212 183
Governer no.
                                                                        100H.: (6.6...7.1)
Customer-spec. information
Customer
                    : FIAT
                                                        Dispersion
                                                                        cm3/:0.3
                     : 8060.25.661
                                                                        100H.: (0.5)
Engine
1st version kW : 88.0
                                                         2nd speed
                                                                        1/min: 300.0
                                                        Contr.-rod trav. m: 9.7...9.9
Del.quantity cm3/: 1.2...1.8
100H.: (1.0...2.0)
Dispersion cm3/: 0.2
100H.: (0.4)
               1/min: 2700
Speed
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                     : 38...42
                                                         (B) Setting of injection pump with
Overflow valve
                                                             externally-mounted governor
                     : 1 417 413 000
                                                        SLEEVE TRAVELS
                                                        1st speed 1/min: 300
Sleeve travel mm: 0.90...1.10
Inlet press., bar: 1.00
                                                        2nd speed 1/min: 435
Calibrating nozzle-holder
 assembly : 0 681 343 009
                                                           Sleeve travel mm: 2.40...2.60
                                                        3rd speed 1/min: 780
                                                        Sleeve travel mm: 4.20...4.40
4th speed 1/min: 1400
Sleeve travel mm: 8.10...8.20
Opening
 pressure, bar : 172...175
Test inj. tubing : 1 680 750 014
                                                        SLEEVE POSITION
                                                        Control-lever position
Outside diameter
                                                                      Degree: -1
x Wall thickness
                                                                       17min: 1430
                     : 6.00X2.00X600
                                                        Cont.-rod travelmm: 15.20...17.80
x Length mm
(A) Injection pump setting values
                                                        FULL-LOAD DELIV. AT FULL-LOAD STOP
    Insp. values in parentheses
    Set constant delivery quant.
                                                        1st version
    per values ____
                                                        Speed
                                                                        1/min: 1350
                                                        Charge press. hPa: 700
                                                        Del.quantity cm3/: 68.0...69.0
1000H:: (66.0...71.0)
Dispersion cm3/: 3.00
1000H:: (5.00)
START OF DELIVERY
Test pressure, bar: 25...27
                    : 2.20...2.30
: (2.15...2.35)
Prestroke mm
F21
```

HIGHEST RATED SPEED 1st version Control-lever position degrees: 55...63 Testing: 1st c-rod trav.mm : 10.70 Speed 1/min: 1390...1400 2nd c-rod trav.mm: 4.00 1/min : 1515...1545 1/min : 1650 Speed 4th speed C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 14...21 Testing: 1/min : 100 Speed C-rod trav.mm min: 11.20 Speed 1/min: 300 : 9.70...9.90 C-rod trav.mm CONSTANT REGULATION 1/min : 350...450 Speed TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1350 C-rod trav.mm : 11.70...11.80 2nd speed 1/min: 500 C-rod trav.mm : 11.70...11.90 compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 500 Speed hPa : 700 Pressure Contr.-rod trav.mm: 11.70...11.80 Measurement 1/min : 500 Speed 1st pressure hPa : -C-rod trav.mm : 11.40...11.50 2nd pressure hPa : 260 : 11.60...11.70 C-rod trav.mm FUEL-DELIVERY CHARACTERISTICS Charge press, hPa : 700 1/min : 800 Speed Del.quantity cm3/: 57.5...59.5 1000H:: (55.0...62.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 10.70 Speed 1/min: 1390...1400

STARTING FUEL DELIVERY

Remarks: Test electrically-released starting quantity (EES) with 12 volts

Speed

Charge press. hPa : -

1/min : 500

1000H.: (44.5...50.5)

Del.quantity cm3/: 46.5...48.5

```
Contr.-rod trav.mm: 9.00...12.00
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                    Cam sequence : 1-5-3-6-2-
Note inst. in remarks column
Test sheet
                  : FIA 5.9 B 1
: 12.06.87
: 12.9.86
                                                    SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - 0.50 (0.75)
Edition
Superceeded
Calibrating oil : 180-4113
                                                    SD mark cyl. no. : 1
                   : 0 400 846 552
Combination no.
                                                    BASIC SETTING
Injection pump
Pump designation : PES6A90D410RS2723
                                                    1st speed
                                                                  1/mi: 1500
EP type number
                   : 0 410 896 085
                                                    Contr.-rod tray.mm: 10.00...10.10
Governor
Governor design.
                   : RQV300...1500AB1152-
                                                    Del.quantity cm3/: 5.7...5.8
                     2L
Governer no.
                   : 0 420 212 196
                                                                  100H.: (5.5...6.0)
Customer-spec. information
Customer
                  : IVECO-FIAT
                                                    Dispersion
                                                                  cm3/:0.3
Engine
                   : 8060.05.662
                                                                  100H.: (0.4)
                                                    2nd speed 1/min: 300.0
Contr.-rod trav. m: 8.8...9.0
1st version kW : 88.0
              1/min: 3000
Speed
                                                    Del.quantity cm3/: 1.0...1.6
TEST BENCH REQUIREMENTS
                                                                  100H.: (0.8...1.8)
                                                                  cm3/: 0.2
100H.: (0.4)
                                                    Dispersion
Calibrating-oil inlet temp. °C
                   : 38...42
                                                     (B) Setting of injection pump with
Overflow valve
                                                         externally-mounted governor
                   : 1 417 413 000
                                                    SLEEVE TRAVELS
                                                    1st speed 1/min: 345
Inlet press., bar : 1.00
                                                      Sieeve travel mm: 2.20...2.40
Calibrating nozz holder
                                                    2nd speed 1/min: 410
                                                      Sleeve trave | mm: 2,80...3.20
             : 0 681 343 009
 assembly
                                                    3rd speed 1/min: 630
                                                      Sleeve travel mm: 4.30...4.70
Opening
                                                    4th speed
                                                                 1/min: 1545
 pressure, bar : 172...175
                                                      Sleeve travel mm: 8.60...8.70
                                                    5th speed 1/min: 1650
                                                      Sleeve travel mm: 9.30...9.50
Test inj. tubing
                  : 1 680 750 014
                                                    SLEEVE POSITION
Outside diameter
x Wall thickness
                                                    Control-lever position
                                                                 Degree: -1
1/min: 1525
                  : 6.00x2.00x600
x Length mm
                                                    Cont.-rod travelmm: 15.20...17.80
(A) Injection pump setting values
    Insp. values in parentheses
    Set constant delivery quant.
                                                    FULL-LOAD DELIV. AT FULL-LOAD STOP
    per values ____
                                                    1st version
START OF DELIVERY
                                                    Speed
                                                                  1/min: 1500
                                                    Del.quantity cm3/: 57.5...58.5
1000H.: (55.5...60.5)
Dispersion cm3/: 3.00
1000H.: (4.50)
Test pressure, bar: 25...27
Prestroke mm
                  : 2.20...2.30
                   : (2.15...2.35)
F23
```

```
HIGHEST RATED SPEED
1st version
Control-lever
 position degrees: 56...64
Testing:
1st c-rod trav.mm: 9.00
  Speed 1/min: 1540...1550
2nd c-rod trav.mm : 4.00
Speed 1/min : 1655...1685
LOWEST RATED SPEED I
Control-lever
 position degrees: 14...22
Testing:
            1/min : 100
Speed
C-rod trav.mm min: 10.30
Speed 1/min: 300
C-rod trav.mm : 8.80...9.00
CONSTANT REGULATION
            1/min: 330...430
Speed
TORQUE CONTROL
Dimension a mm : 0.90
Torque-control curve - 1st version
1st speed 1/min : 1500
  C-rod trav.mm : 10.00...10.10
2nd speed 1/min: 500
C-rod trav.mm : 10.90...11.00
3rd speed 1/min : 725
  C-rod trav.mm : 10.60...10.80
4th speed 1/min: 1175
  C-rod trav.mm : 10.00...10.20
FUEL-DELIVERY CHARACTERISTICS
           1/min : 500
Speed
Del.quantity cm3/: 48.0...50.0
            1000H.: (45.5...52.5)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 9.00
Speed
           1/min : 1540...1550
STARTING FUEL DELIVERY
Speed
            1/min : 100
Del.quantity cm3/: 95.0...105.0
            1000H.: (92.0...108.0)
Contr.-rod trav.mm: 16.00...16.40
Remarks:
Test electrically-released starting
```

F24

Note inst. in remarks column

Test sheet Edition Superceeded : KHD 1 G 30 : 31.07.87 : 9.3.87 Calibrating oil : ISO-4113

Combination no. : 0 400 863 012

Injection pump

Pump designation : PES3A85D410/3RS2731

EP type number : 0 410 883 988

Governor

: RSV325...1250A2C2168 Governor design.

-3L

: 0 420 232 475 Governer no.

Customer-spec. information Customer

: F3L913 Engine

1st version kW : 44.0 Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values \_\_\_\_

START OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 3- 2 SD ang. spacing CS: 0-120-240 Tolerance + - : 0.50 (0.75) BASIC SETTING 1st speed 1/mi: 1250 Contr.-rod trav.mm: 9.90...10.00 Del.quantity cm3/: 6.8...6.9 100H.: (6.6...7.1) Dispersion cm3/:0.3100H.: (0.5) 1/min: 325.0 2nd speed Contr.-rod trav. m: 6.2...6.4
Del.quantity cm3/: 1.0...1.6
100H.: (0.8...1.8)
Dispersion cm3/: 0.2
100H.: (0.4) SLEEVE POSITION Control-lever position Degree: -3 1/min: 800 Cont.-rod travelmm: 0.30...0.70 Governor-spring reload Notch setting x : 4.50 FULL-LOAD DELIV. AT FULL-LOAD STOP 1st version 1/min: 1250 Speed Del.quantity cm3/: 68.5...69.5 1000H.: (66.5...71.5) Dispersion cm3/: 3.00 1000H.: (5.00) HIGHEST RATED SPEED 1st version Control-lever position degrees: 41...49 Testing: 1st c-rod trav.mm : 8.90 Speed 1/min: 1290...1300 2nd c-rod trav.mm : 4.00 Speed 1/min: 1315...1345 3rd c-rod trav.mm: 4.00 Speed 1/min: 1330...1360 4th speed 1/min: 1500

C-rod trav.mm : 0.30...1.40 LOWEST RATED SPEED I Control-lever position degrees: 12...20 Setting point w/out aux. spring 1/min : 325 Contra-rod travamm: 5.8 Testing: 1/min : 100 Speed C-rod trav.mm min: 19.50 Speed 1/min: 323 C-rod trav.mm : 6.20...6.40 C-rod trav.mm : 2.00 1/min: 460...520 Speed TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min: 1250 C-rod trav.mm: 9.90...10.00 2nd speed 1/min: 500 C-rod trav.mm: 10.20...10.30 4th speed 1/min: 960 C-rod trav.mm : 9.90...10.10 FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 800 Del.quantity cm3/: 58.0...60.0 1000H:: (55.5...62.5) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 8.90 1/min : 1290...1300 Speed STARTING FUEL DELIVERY

Remarks:

: TKS2.60

APPLICATION
Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 3- 4- 2 Note inst. in remarks column Test sheet Edition Superceeded : KHD 4,1 D SD ang. spacing CS: 0-90-180-270 Tolerance + - : 0.50 (0.75) : 10.08.87 : 13.5.87 Calibrating oil : ISO-4113 BASIC SETTING : 0 400 864 063 Combination no. 1st speed 1/mi: 1250 Injection pump Pump designation : PES4A85D410/3RS2638 Contr.-rod trav.mm: 12.70...12.80 : 0 410 884 950 EP type number Del.quantity cm3/: 8.2...8.3 Governor Governor design. : RSV325...1400A8C707-100H.: (8.0...8.5) 3L Governer no. : 0 420 232 440 cm3/:0.3Dispersion Customer-spec. information Customer 100H.: (0.4) : BF4L913 Engine 1/min: 325.0 2nd speed Contr.-rod trav. m: 8.4...8.6 Del.quantity cm3/: 0.8...1.4 100H.: (0.6...1.6) Dispersion cm3/: 0.2 100H.: (0.4) 1st version kW : 78.0 1/min: 2800 Speed TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. °C SLEEVE POSITION : 38...42 Control-lever position Degree: -3 17min: 800 Overflow valve : 1 417 413 000 Cont.-rod travelmm: 0.30...0.70 Inlet press., bar: 1.00 Governor-spring reload Notch setting x : 4.00 Calibrating nozzle-holder FULL-LOAD DELIV. AT FULL-LOAD STOP assembly : 0 681 343 009 1st version Opening Speed 1/min: 1250 Charge press. hPa: 700 Del.quantity cm3/: 82.5...83.5 1000H.: (80.5...85.5) Dispersion cm3/: 3.00 pressure, bar : 172...175 Test inj. tubing : 1 680 750 014 1000H.: (4.50) Outside diameter x Wall thickness : 6.00XZ.00X600 HIGHEST RATED SPEED x Length mm 1st version (A) Injection pump setting values Control-lever Insp. values in parentheses position degrees: 49...57 Set constant delivery quant. Testing: per values 1st c-rod trav.mm : 11.70 START OF DELIVERY Speed 1/min: 1290...1300 2nd c-rod trav.mm : 4.00 Speed 1/min : 1315...1345 3rd c-rod trav.mm : 4.00 Test pressure, bar: 25...27 : 2.50...2.60 Prestroke mm : (2.45...2.65) Speed 1/min: 1360...1390 F27

4th speed 1/min: 1540 C-rod trav.mm: 0.30...1.40 LOWEST RATED SPEED I Control-lever position degrees: 9...17 Setting point w/out aux. spring Speed 1/min : 325 Contr.-rod trav.mm: 8.0 Speed 1/min: 325 C-rod trav.mm : 8.40...8.60 C-rod trav.mm : 2.00 1/min : 620...680 Speed TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1250 C-rod trav.mm : 12.70...12.80 2nd speed 1/min: 500 C-rod trav.mm : 13.70...13.80 3rd speed 1/min : 850 C-rod trav.mm : 13.50...13.60 4th speed 1/min: 950 C-rod trav.mm : 13.20...13.40 compensator (LDA,ADA,ALDA) 1st version Setting 1/min : 500 Speed hPa : 700 Pressure Contr.-rod trav.mm: 13.70...13.80 Measurement Speed 1/min : 500 1st pressure hPa : -C-rod trav.mm : 12.50...12.60 2nd pressure hPa : 390 C-rod trav.mm : 13.50...13.60 3rd pressure hPa : 250 C-rod trav.mm : 12.80...13.00 FUEL-DELIVERY CHARACTERISTICS Charge press. hPa : 700 1/min : 850 Speed Del.quantity cm3/: 84.5...86.5 1000H.: (82.0...89.0) Charge press. hPa : -Speed 1/min: 500 Del.quantity cm3/: 59.5...61.5 1000H.: (57.5...63.5) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 11.70

F28

Speed 1/min: 1290...1300

STARTING FUEL DELIVERY

Speed 1/min: 100 Del.quantity cm3/: 95.0...105.0 1000H.: (92.0...108.0)

Contr.-rod trav.mm: 17.10...17.30

Remarks: Check electrically unlatched starting fuel delivery (EES) with 24 volt.

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                        Contr.-rod trav.mm: 9.00...12.00
                                                        Cam sequence : 1- 3- 4- 2
Note inst. in remarks column
Test sheet
Edition
Superceeded
                   : KHD 4,1 G
: 12.06.87
: 23.9.86
                                                        SD ang. spacing CS: 0-90-180-270 Tolerance + - : 0.50 (0.75)
Calibrating oil : ISO-4113
                                                        BASIC SETTING
                    : 0 400 864 066
Combination no.
                                                        1st speed
                                                                       1/mi: 880
Injection pump
Pump designation : PES4A80D410/3RS2717
                                                        Contr.-rod trav.mm: 10.20...10.30
                     : 0 410 884 045
EP type number
                                                        Del.quantity cm3/: 4.9...5.0
Governor
Governor design.
                    : RSV325...900A1C602-2
                                                                       100H.: (4.8...5.2)
Governer no.
                    : 0 420 232 448
                                                        Dispersion
                                                                      cm3/:0.2
Customer-spec. information
Customer
                   : KHD
                                                                       100H.: (0.4)
                                                       2nd speed 1/min: 325.0
Contr.-rod trav. m: 7.8...8.0
Del.quantity cm3/: 1.0...1.6
100H.: (0.8...1.7)
Engine
                    : F4L913
1st version kW : 43.0
Speed
              1/min: 1800
                                                                      cm3/:0.2
                                                        Dispersion
TEST BENCH REQUIREMENTS
                                                                       100H.: (0.3)
                                                        SLEEVE POSITION
Calibrating-oil inlet temp. °C
                     : 38...42
                                                        Control-lever position
                                                                     Degree: -3
1/min: 800
Overflow valve
                                                        Cont.-rod travelmm: 0.30...0.70
                     : 1 417 413 000
                                                        Governor-spring reload
Inlet press., bar : 1.00
                                                       Notch setting x : 4.25
Calibrating nozzle-holder
             : 0 681 343 909
                                                       FULL-LOAD DELIV. AT FULL-LOAD STOP
 assembly
Opening
                                                       1st version
 pressure, bar : 172...175
                                                                      1/min: 880
                                                        Speed
                                                       Del.quantity cm3/: 49.5...50.5
1000H.: (48.0...52.0)
                                                                     cm3/ : 2.50
Test inj. tubing : 1 680 750 014
                                                       Dispersion
                                                                     1000H.: (4.00)
Outside diameter
x Wall thickness
                                                       HIGHEST RATED SPEED
                    : 6.00x2.00x600
                                                       1st version
x Length mm
                                                       Control-lever
(A) Injection pump setting values
                                                        position degrees: 44...52
    Insp. values in parentheses
Set constant delivery quant.
                                                       Testing:
                                                       1st c-rod trav.mm : 9.20
Speed 1/min : 920...930
2nd c-rod trav.mm : 4.00
    per values ____
START OF DELIVERY
                                                                    1/min : 945...975
Test pressure, bar: 25...27
                                                          Speed
                                                                     1/min : 1110
                                                        4th speed
                   : 2.10...2.20
Prestroke mm
                                                         C-rod trav.mm : 0.30...1.40
                    : (2.05...2.25)
G01
```

LOWEST RATED SPEED I Control-lever position degrees: 21...29 Setting point w/out aux. spring Speed 1/min: 325 Contr.-rod trav.mm: 7.9 1/min: 325 mm: 7.80...8.00 mm: 2.00 Speed C-rod trav.mm C-rod trav.mm 1/min : 350...410 Speed SET IDLE AUXILIARY SPRING Contr.-rod trav.mm: 2.00 ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 9.20 Speed 1/min : 920...930 STARTING FUEL DELIVERY Speed 1/min : 100 Del.quantity cm3/: 125.0...135.0 1000H.: (122.0...138.0) Contr.-rod trav.mm: 19.50...21.00 Remarks:

Contr.-rod trav.mm: 9.00...12.00 BOSCH INJ. PUMP TEST SPECIFICATIONS Cam sequence : 1- 3- 4- 2 Note inst. in remarks column : MWH 4,1 C : 31.07.87 Test sheet SD ang. spacing  $^{0}$ CS: 0-90-180-270 Tolerance + - : 0.50 (0.75) Edition Superceeded Calibrating oil : ISO-4113 START OF DELIVERY DIFFERENCE : 0 400 864 071 Combination no. betw.c-rod trav.mm: 9.00...0.00 Difference o CS : 3.50...4.50 Injection pump Pump designation : PES4A90D320/3RS2743 BASIC SETTING EP type number : 0 410 894 034 Governor : RSV325...1500A2C505-Governor design. 1/mi: 1075 1st speed 2R : 0 420 233 196 Contr.-rod trav.mm: 9.80...9.90 Governer no. Customer-spec. information Del.quantity cm3/: 7.4...7.5 Customer : MWM 100H.: (7.2...7.7) : TD226B-4 Engine Dispersion cm3/:0.31st version kW : 65.0 1/min: 3000 Speed 100H.: (0.5) TEST BENCH REQUIREMENTS 1/min: 325.0 2nd speed Contr.-rod trav. m: 6.7...6.9 Del.quantity cm3/: 0.9...1.5 100H.: (0.7...1.7) Calibrating-oil inlet temp. °C : 38...42 cm3/: 0.2 100H.: (0.4) Dispersion Overflow valve : 1 417 413 000 SLEEVE POSITION Control-lever position Inlet press., bar : 1.00 Degree: -3 17min: 800 Calibrating nozzle-holder Speed : 0 681 343 009 Cont.-rod travelmm: 0.30...0.70 assembly Opening Governor-spring reload pressure, bar : 172...175 Notch setting x : 3.80 FULL-LOAD DELIV. AT FULL-LOAD STOP Test inj. tubing : 1 680 750 014 1st version Speed 1/min: 1075
Del.quantity cm3/: 74.5...75.5 Outside diameter x Wall thickness 1000H.: (72.5...77.5) cm3/ : 3.00 1000H.: (5.00) : 6.00x2.00x600 x Length mm Dispersion (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. HIGHEST RATED SPEED per values 1st version Control-lever START OF DELIVERY position degrees: 42...50 Test pressure, bar: 25...27 Testing: : 2.95...3.05 1st c-rod trav.mm : 8.80 Prestroke mm : (2.90...3.10) Speed 1/min: 1115...1125 G03

```
2nd c-rod trav.mm: 4.00
  Speed 1/min: 1155...1185
3rd c-rod trav.mm : 4.00
Speed 1/min: 1170...1200
4th speed 1/min: 1330
  C-rod trav.mm : 0.30...1.40
LOWEST RATED SPEED I
Control-lever
 position degrees: 18...26
Setting point w/out aux. spring
            1/min : 325
Speed
Contr.-rod trav.mm: 6.3
Testing:
Speed
             1/min : 100
C-rod trav.mm min : 19.50
         1/min : 325
Speed
               : 6.70...6.90
: 2.00
C-rod trav.mm
C-rod trav.mm
            1/min : 420...480
Speed
TORQUE CONTROL
Torque-control curve - 1st version
            1/min : 1075
1st speed
  C-rod trav.mm : 9.80...9.90
2nd speed 1/min: 500
  C-rod trav.mm : 9,80...10.00
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 8.80
Speed
            1/min : 1115...1125
STARTING FUEL DELIVERY
Speed
             1/min : 100
Del.quantity cm3/: 132.0...142.0
1000H.: (129.0...145.0)
Contr.-rod trav.mm: 19.50...21.00
Remarks:
APPLICATION
Excavator
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BOSCH INJ. PUMP TEST SPECIFICATIONS Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 3- 4- 2 Note inst. in remarks column : LIE 5.6 A : 28.08.87 Test sheet SD ang. spacing CS: 0-90-180-270 Tolerance + - : 0.50 (0.75) Edition Superceeded : 12.9.86 Calibrating oil : ISO-4113 START OF DELIVERY DIFFERENCE Combination no. : 0 400 874 238 betw.c-rod trav.mm: 8.50...9.50 Difference CS : 4.00...5.00 Injection pump : PES4A95D410R\$2685 Pump designation EP type number : 0 410 894 996 BASIC SETTING Governor : RSV400...1000A1C2187 1/mi: 1000 Governor design. 1st speed : 0 420 232 387 Contr.-rod trav.mm: 10.20...10.30 Governer no. Del.quantity cm3/ : 8.6...8.8 Customer-spec. information Customer : LIEBHERR 100H.: (8.4...9.0) Engine : D904 NA cm3/:0.3Dispersion 1st version kW : 70.0 Speed 1/min: 2000 100H.: (0.6) 2nd speed 1/min: 400.0 Contr.-rod trav. m: 6.1...6.3 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.0...1.6 100H:: (0.7...1.8) Dispersion cm3/: 0.3 Calibrating-oil inlet temp. °C : 40...45 100H.: (0.5) Overflow valve : 1 417 413 000 SLEEVE POSITION Inlet press., bar : 1.50 Control-lever position Degree: -3 17min: 800 Calibrating nozzle-holder Speed Cont.-rod travelmm: 0.30...0.70 assembly : 0 681 343 909 Opening Governor-spring reload pressure, bar : 172...175 Notch setting x : 3.50 FULL-LOAD DELIV. AT FULL-LOAD STOP Test inj. tubing : 1 680 750 008 1st version Outside diameter Speed 1/min: 1000 Del.quantity cm3/: 86.0...88.0 1000H.: (84.0...90.0) Dispersion cm3/: 3.50 1000H.: (6.00) x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. HIGHEST RATED SPEED per values \_\_\_\_ 1st version Control-lever START OF DELIVERY position degrees: 45...53 Test pressure, bar: 25...27 Testing: 1st c-rod trav.mm : 9.20 : 2.70...2.80 Prestroke mm Speed 1/min: 1040...1050 : (2.65...2.85) **G05** 

2nd c-rod trav.mm: 4.00 Speed 1/min: 1050...1080 3rd c-rod trav.mm: 4.00 Speed 1/min: 1085...1115 4th speed 1/min: 1230 C-rod trav.mm : 0.30...1.40 LOWEST RATED SPEED I Control-lever position degrees: 17...26 Setting point w/out aux. spring Speed 1/min: 400 Contr.-rod trav.mm: 5.7 Testing: 1/min : 100 Speed C-rod trav.mm min: 19.50 Speed 1/min : 400 C-rod trav.mm : 6.10...6.30 C-rod trav.mm : 2.00 1/min : 515...575 Speed TORQUE CONTROL Torque-control curve - 1st version 1/min : 1000 1st speed C-rod trav.mm : 10.20...10.30 2nd speed 1/min: 500 C-rod trav.mm : 10,20...10.40 FUEL-DELIVERY CHARACTERISTICS Speed 1/min : 600 Del.quantity cm3/: 80.5...83.5 1000H.: (78.0...86.0) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 9.20 1/min: 1040...1050 Speed MIDDLE RATED SPEED Contr.-rod trav.mm: 4.00 STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/: 120.0...130.0 1000H.: (117.0...133.0) Contr.-rod trav.mm: 19.50...21.00 LOW IDLE 1/min : 400 Speed Contr.-rod trav.mm: 6.10...6.30 Del.quantity cm3/: 10.0...16.0 1000H.: (7.5...18.5)

Dispersion cm3/: 3.50 1000H.: (5.50)

Note inst. in remarks column

Test sheet Edition Superceeded : MB 4,0 B : 21.08.87 : 22.10.86 Calibrating oil : ISO-4113

: 0 400 874 240 Combination no.

Injection pump

Pump designation : PES4A90D410RS2666 EP type number : 0 410 894 029

Governor

Governor design. : RSV350...1400A0C2006

-1L

: 0 420 232 449 Governer no.

Customer-spec. information Customer : DAIMLER-BENZ

Engine : 0M364

1st version kW : 66.0 1/min: 2800 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values

START OF DELIVERY

Test pressure, bar: 25...27

: 2.25...2.35 Prestroke mm

: (2.20...2.40)

Contr.-rod trav.mm: 9.00...12.00 LOWEST RATED SPEED I Cam sequence : 1- 3- 4- 2 Control-lever position degrees: 24...32 Setting point w/out aux. spring 1/min : 350 SD ang. spacing CS: 0-90-180-270 Tolerance + - : 0.50 (0.75) Contr.-rod trav.mm: 7.9 Testing: BASIC SETTING 1/min : 100 Speed C-rod trav.mm min: 19.50 Speed 1/min: 350 C-rod trav.mm: 7.80...8.00 C-rod trav.mm: 2.00 ist speed 1/mi: 1380 Contr.-rod trav.mm: 10.40...10.50 Speed 1/min: 480...540 Del.quantity cm3/: 6.3...6.4 SET IDLE AUXILIARY SPRING 100H.: (6.1...6.6) Contr.-rod trav.mm: 2.00 cm3/: 0.3 Dispersion TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1380 C-rod trav.mm : 10.40...10.50 100H.: (9.4) 2nd speed 1/min: 350.0 Contr.-rod trav. m: 7.8...8.0 Del.quantity cm3/: 0.6...1.0 2nd speed 1/min: 500 C-rod trav.mm: 11.70...11.80 3rd speed 1/min: 900 100H.: (0.4...1.2) C-rod tray.mm : 11.10...11.30 cm3/: 0.2 100H.: (0.4) Dispersion FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 500 Del.quantity cm3/: 52.0...54.0 1000H.: (49.5...56.5) SLEEVE POSITION Control-lever position Degree: -3 1/min: 800 cm3/: -Dispersion 1000H.: (5.50) Cont.-rod travelmm: 0.30...0.10 ROTATIONAL-SPEED LIMITATION Governor-spring reload Notch setting x : 4.50 1st version 1mm control-rod travel less than FULL-LOAD DELIV. AT FULL-LOAD STOP full-load trav.mm: 9.40 1/min : 1430...1440 Speed 1st version 1/min: 1380 Speed Del.quantity cm3/: 63.0...64.0 1000H.: (61.0...66.0) Dispersion cm3/: 3.00 1000H.: (4.50) STARTING FUEL DELIVERY Speed 1/min: 100
Del.quantity cm3/: 78.0...88.0
1000H.: (75.0...91.0)
Contr.-rod trav.mm: 16.30...16.70 HIGHEST RATED SPEED 1st version Control-lever position degrees: 59...67 LOW IDLE Speed 1/min: 350 Contr.-rod trav.mm: 7.80...8.00 Testing: 1st c-rod trav.mm : 9.40 Speed 1/min : 1430...1440 2nd c-rod trav.mm : 4.00 Del.quantity cm3/: 6.0...10.0 1000H.: (4.0...12.0) Dispersion cm3/: 2.50 Speed 1/min: 1480...1510 4th speed 1/min: 1575 1000Ha: (4.50) C-rod tray.mm : 0.30...1.70 Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column

Test sheet : MB 4,0 C : 2.9.87 : 3.87 Edition Superceeded Calibrating oil : ISO-4113

Combination no. : 0 400 874 243

Injection pump

Pump designation : PES4A90D410RS2666-2L : 0 410 894 033

EP type number Gevernor

Governor design. : RSV350...1200A2C1139 -2L

Governer no. : 0 420 232 471

Customer-spec. information Customer : DAIMLER-BENZ

: 0M364 Engine

1st version kW : 50.0 1/min: 2400 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. OC

: 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values \_\_\_\_

START OF DELIVERY

Test pressure, bar: 25...27

: 2.25...2.35 Prestroke mm

: (2.20...2.40)

Contrrod trav.mm: 9.0012.00	C-rod trav.mm : 0.301.40
Cam sequence : 1- 3- 4- 2	LOWEST RATED SPEED I Setting point w/out aux. spring
SD ang. spacing CS: 0-90-180-270   Tolerance + - : 0.50 (0.75)	Speed 1/min: 350 Contrrod trav.mm: 8.40
BASIC SETTING	Testing: Speed 1/min: 100 C-rod trav.mm min: 19.50
1st speed	Speed 1/min : 350
Contrrod trav.mm: 9.409.50	C-rod trav.mm : 8.40 C-rod trav.mm : 2.00
Del.quantity cm3/: 4.95.0	Speed 1/min: 53U59U
100H.: (4.75.2)	TORQUE CONTROL Torque-control curve - 1st version
Dispersion cm3/: 0.3	1st speed
100H.: (0.5)	2nd speed 1/min : 800
2nd speed 1/min: 350.0	C-rod trav.mm : 10.5010.60 3rd speed 1/min : 950 C-rod trav.mm : 10.3010.50
Contrrod trav. m: 8.18.7	4th speed 1/min : 1050
Del.quantity cm3/: 1.01.2   100H.: (0.81.4)	C-rod trav.mm : 9.7010.00
Dispersion cm3/: 0.2 1 100H.: (0.4)	FUEL-DELIVERY CHARACTERISTICS Speed 1/min : 800
SLEEVE POSITION	Del.quantity cm3/: 45.047.0 1000H.: (42.549.5)
Control-lever position Degree: -3	Speed 1/min: 1000
Degree: -3 1 Speed 1/min: 800 1 Controd travelmm: 0.300.70	Del.quantity cm3/: 48.051.0 1000H.: (45.553.5)
1	ROTATIONAL-SPEED LIMITATION
Governor-spring reload Notch setting x : 5.00	1st version
FULL-LOAD DELIV. AT FULL-LOAD STOP	1mm control-rod travel less than
1 1st version	full-load trav.mm: 8.40 Speed 1/min: 12401245
Speed 1/min: 1200	STARTING FUEL DELIVERY
1000H.: (47.052.0)	STARTING FOEL PELIVERT
Dispersion cm3/: 3.00 1 1000H.: (5.00)	Speed 1/min: 100
HIGHEST RATED SPEED	Del.quantity cm3/: 80.090.0 1000H.: (77.093.0)
1st version   Control-lever	Contrrod trav.mm: 16.2016.60
position degrees: 4957	LOW IDLE
Testing:	Speed 1/min: 350 Contrrod trav.mm: 8.108.70
1st c-rod trav.mm : 8.40	Del.quantity cm3/ : 10.012.0
2nd c-rod trav.mm : 4.00	1000H.: (8.014.0) Dispersion cm3/: 2.50
3rd c-rod trav.mm : 4.00	1000H.: (4.50)
4th speed 1/min : 1530	Remarks:
G11	

Note inst. in remarks column

Test sheet Edition : MB 5,7 M12 2.9.87 5.87 Superceeded Calibrating oil : ISO-4113

Combination no. : 0 400 876 108

Injection pump

: PES6A80D410RS2085X Pump designation

EP type number : 0 410 886 045

Governor

: RSV350...1400A2C Governor design.

1001L

: 0 420 232 464 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M352

1st version kW : 66.0 1/min: 2800 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. OC

: 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values \_\_\_\_

START OF DELIVERY

Test pressure, bar: 25...27

: 2.15...2.25 Prestroke mm

: (2.10...2.30)

Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1-5- 3- 6- 2- 4 SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) BASIC SETTING 1/mi: 1400 1st speed Contr.-rod trav.mm: 8.50...8.60 Del.quantity cm3/: 4.1...4.2 100H.: (4.0...4.4) Dispersion cm3/:0.2100H.: (0.3) 2nd speed 1/min: 350.0 Contr.-rod trav. m: 7.4...7.6 Del.quantity cm3/: 1.0...1.4 100H.: (0.8...1.5) Dispersion cm3/: 0.2 100H.: (0.3) SLEEVE POSITION Control-lever position Degree: -3 Speed 17min: 800 Cont.-rod travelmm: 0.30...1.00 Governor-spring reload Notch setting x : 4.50 FULL-LOAD DELIV. AT FULL-LOAD STOP ist version 1/min: 1400 Speed Del.quantity cm3/: 41.5...42.5 1000H.: (40.0...44.0) Dispersion cm3/: 2.00 1000H.: (3.50) HIGHEST RATED SPEED 1st version Control-lever position degrees: 46...54 Testing: 1st c-rod trav.mm : 7.50 Speed 1/min : 1455...1465 2nd c-rod trav.mm: 4.00 Speed 1/min: 1475...1505 3rd c-rod trav.mm : 4.00 Speed 1/min: 1525...1555 4th speed 1/min: 1600

G14

C-rod trav.mm : 0.30...1.40 LOWEST RATED SPEED I Setting point w/out aux. spring 1/min : 350 Contr.-rod trav.mm: 7.5 Testing: 1/min : 100 Speed C-rod trav.mm min: 19.50

Speed 1/min: 350

C-rod trav.mm : 7.50

C-rod trav.mm : 2.00

Speed 1/min: 730...790 TORQUE CONTROL Dimension a mm : 0.50 Torque-control curve - 1st version 1st speed 1/min: 1400 C-rod trav.mm: 8.50...8.60 2nd speed 1/min: 500 C-rod trav.mm: 9.80...9.90 3rd speed 1/min: 800 C-rod trav.mm : 8.80...9.10 FUEL-DELIVERY CHARACTERISTICS 1/min : 500 Speed Del.quantity cm3/: 40.5...42.5 1000H:: (38.5...44.5) Speed 1/min: 800 Del.quantity cm3/: 39.0...41.0 1000H.: (37.0...43.0) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 7.50 1/min: 1455...1465

Speed

STARTING FUEL DELIVERY

Speed 1/min: 100 Del.quantity cm3/: 78.0...88.0 1000H:: (75.0...91.0)

SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column BASIC SETTING : MB 5,7 Q17 : 2.9.87 Test sheet Edition 1/mi: 1400 1st speed Superceeded : 12.86 : ISO-4113 Calibrating oil Contr.-rod trav.mm: 9.70...9.80 : 0 400 876 259 Combination no. Del.quantity cm3/: 6.3...6.4 Injection pump 100H.: (6.1...6.6) : PE\$6A90D410R\$2293 Pump designation EP type number : 0 410 896 031 cm3/:0.3Dispersion Governor Governor design. : RSV350...1400A0C 100H.: (0.4) 1080L : 0 420 232 408 2nd speed 1/min: 350.0 Contr.-rod trav. m: 6.5...7.1 Governer no. Del.quantity cm3/: 1.0...1.2 100H.: (0.8...1.4) Customer-spec. information Customer : DAIMLER BENZ cm3/:0.2Dispersion TEST BENCH REQUIREMENTS 100H.: (-) Calibrating-oil inlet temp. °C SLEEVE POSITION : 38...42 Control-lever position Degree: -3 1/min: 800 Overflow valve Speed : 1 417 413 000 Cont.-rod travelmm: 0.30...0.70 Governor-spring reload Inlet press., bar : 1.00 Notch setting x : 3.50 Calibrating nozzle-holder : 0 681 343 009 assembly FULL-LOAD DELIV. AT FULL-LOAD STOP Opening 1st version pressure, bar : 172...175 Speed 1/min: 1400 Del.quantity cm3/: 63.0...64.0 1000H.: (61.0...66.0) cm3/: 3.00 Test inj. tubing : 1 680 750 014 Dispersion 1000H.: (4.50) Outside diameter x Wall thickness HIGHEST RATED SPEED x Length mm : 6.00X2.00X600 1st version Control-lever (A) Injection pump setting values position degrees: 64...72 Insp. values in parentheses Set constant delivery quant. Testing: per values 1st c-rod trav.mm: 8.70 1/min : 1440...1445 Speed START OF DELIVERY 2nd c-rod trav.mm : 4.00 Speed 1/min: 1473...1486 3rd c-rod trav.mm: 4.00 Test pressure, bar: 25...27 Prestroke mm : 2.15...2.25 Speed 1/min : 1510...1540 : (2.10...2.30) 4th speed 1/min : 1570 Contr.-rod trav.mm: 9.00...12.00 C-rod trav.mm : 0.30...1.40 : 1-5- 3- 6- 2- 4 Cam sequence LOWEST RATED SPEED I Setting point w/out aux. spring 1/min : 350 Speed G17

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Contr.-rod trav.mm: 6.80
Testing:
Speed 1/min: 100
C-rod trav.mm min: 19.50
Speed 1/min: 35G
C-rod trav.mm
                    : 6.80
C-rod trav.mm
                      : 2.00
               1/min: 450...510
Speed
TORQUE CONTROL
Torque-control curve - 1st version
1st speed 1/min: 1400
C-rod trav.mm: 9.70...9.80
2nd speed 1/min: 600
  C-rod trav.mm : 9.80...10.00
FUEL-DELIVERY CHARACTERISTICS
              1/min : 600
Speed
Del.quantity cm3/: 51.0...53.0
1000H:: (49.0...55.0)
Speed 1/min: 850
Del.quantity cm3/: 56.0...58.0
1000H:: (53.5...60.5)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 8.70
Speed
             1/min : 1440...1445
STARTING FUEL DELIVERY
LOW IDLE
               1/min : 350
Speed
Contr.-rod trav.mm: 6.50...7.10
Del.quantity cm3/: 10.0...12.0
1000H.: (8.0...14.0)
Dispersion cm3/: 2.00
               1000H.: (-)
Remarks:
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BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                        Contr.-rod trav.mm: 9.00...12.00
                                                        Cam sequence : 1-5-3-6-2-4
Note inst. in remarks column
Test sheet
                     : NB 5.7 $10
: 2.9.87
                                                        SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300
Tolerance + - 0.50 (0.75)
Edition
Superceeded
Calibrating oil
                    : ISO-4113
                                                        BASIC SETTING
Combination no.
                     : 0 400 876 263
                                                        1st speed
                                                                        1/mi: 1300
Injection pump
Pump designation : PES6A90D410RS2293
                                                        Contr.-rod trav.mm: 8.70...8.80
EP type number
                    : 0 410 896 031
                                                        Del.quantity cm3/: 5.0...5.1
Governor
Governor design.
                     : RSV350...1300A0C
                                                                       100H.: (4.8...5.3)
                      1107L
Governer no.
                     : 0 420 232 415
                                                                       cm3/:0.3
                                                        Dispersion
Customer-spec. information
Customer
                                                                       100H.: (0.4)
                    : DAIMLER-BENZ
                                                        2nd speed 1/min: 350.0
Contr.-rod trav. m: 6.6...7.2
Del.quantity cm3/: 1.0...1.2
Engine
                     : OM 352
1st version kW : 80.9
               1/min: 2600
                                                                       100H.: (0.8...1.4)
Speed
                                                                       cm3/: 0.2
                                                        Dispersion
                                                                       100H.: (0.4)
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                                                        SLEEVE POSITION
                     : 38...42
                                                        Control-lever position
                                                                      Degree: -3
1/min: 800
Overflow valve
                     : 1 417 413 000
                                                        Cont.-rod travelmm: 0.30...1.00
Inlet press., bar : 1.00
                                                        Governor-spring reload
                                                        Notch setting x : 4.00
Calibrating nozzle-holder
             : 0 681 343 909
                                                        FULL-LOAD DELIV. AT FULL-LOAD STOP
 assembly
Opening
                                                        1st version
 pressure, bar
                    : 172...175
                                                                       1/min: 1300
                                                        Speed
                                                        Del.quantity cm3/: 50.0...51.0
1000H:: (48.0...53.0)
Dispersion cm3/: 3.00
1000H:: (4.50)
Test inj. tubing
                    : 1 680 750 014
Outside diameter
x Wall thickness
                                                        HIGHEST RATED SPEED
                     : 6.00x2.00x600
x Length mm
                                                        1st version
                                                        Control-lever
(A) Injection pump setting values
                                                         position degrees: 62...70
    Insp. values in parentheses
Set constant delivery quant.
                                                        Testing:
                                                        1st c-rod trav.mm : 7.70
Speed 1/min : 1340...1345
2nd c-rod trav.mm : 4.00
    per values
START OF DELIVERY
                                                        Speed 1/min: 1370...1383
3rd c-rod trav.mm: 4.00
Test pressure, bar: 25...27
                                                                    1/min : 1390...1420
Prestroke mm
                     : 2.15...2.25
                                                          Speed
                     : (2.10...2.30)
                                                                      1/min : 1550
                                                        4th speed
G19
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C-rod trav.mm : 0.30...1.70
LOWEST RATED SPEED I
Setting point w/out aux. spring
              1/min : 350
Speed
Contr.-rod trav.mm: 6.90
Testing:
               1/min: 100
Speed
C-rod trav.mm min: 19.50
Speed 1/min: 350
C-rod trav.mm
                   : 6.90
C-rod trav.mm
                     : 2.00
              1/min: 485...545
Speed
TORQUE CONTROL
Torque-control curve - 1st version
1st speed 1/min: 1300
C-rod trav.mm: 8,70...8.80
2nd speed 1/min: 500
  C-rod trav.mm : 9.90...10.00
3rd speed 1/min : 900
  C-rod trav.mm : 9.10...9.30
FUEL-DELIVERY CHARACTERISTICS
Speed 1/min : 500
Del.quantity cm3/ : 47.5...49.5
              1000H.: (45.0...52.0)
1/min : 900
Speed
Del.quantity cm3/: 50.5...53.5
1000H.: (48.0...56.0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 7.70
              1/min: 1340...1345
Speed
STARTING FUEL DELIVERY
Speed
              1/min : 100
Del.quantity cm3/: 78.0...88.0
1000H.: (75.0...91.0)
Contr.-rod trav.mm: 14.80...15.20
LOW IDLE
Speed
              1/min : 350
Contf.~rod trav.mm: 6.60...7.20
Del.quantity cm3/: 10.0...12.0
1000H.: (8.0...14.0)
Dispersion cm3/: 2.00
              1000H.: (4.00)
Remarks:
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BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                     Cam sequence : 1-5-3-6-2-4
Note inst. in remarks column
Test_sheet
                                                     SD ang. spacing ^{0}CS: 0-60-120-180-240-300 Tolerance + - ^{0}: 0.50 (0.75)
                   : KHD 6,1 E 3
                   : 26.06.87
Edition
Superceeded
Calibrating oil : ISO-4113
                                                     BASIC SETTING
Combination no.
                   : 0 400 876 275
                                                                    1/mi: 1150
                                                     1st speed
Injection pump
                                                     Contr.-rod trav.mm: 11.80...11.90
Pump designation : PES6A95D410R$2471
                                                     Del.quantity cm3/: 10.8...11.0
EP type number : 0 410 896 952
Governor
Governor design. : RSV325...1150A8C674L
                                                                   100H.: (10.6...11.2)
Governer no.
                  : 0 420 232 331
                                                     Dispersion
                                                                   cm3/: 0.3
Customer-spec. information
Customer
                   : KHD
                                                                   100H.: (0.6)
Engine
                   : BF6L913C
                                                     2nd speed 1/min: 325.0 Contr.-rod trav. m: 7.2...7.4
                                                     Del.quantity cm3/ : 1.6...2.2
1st version kW : 132.0
              1/min: 2300
                                                                   100H.: (1.3,..2.4)
Speed
                                                                   cm3/:0.3
                                                     Dispersion
TEST BENCH REQUIREMENTS
                                                                   100H.: (0.5)
Calibrating-oil inler temp. OC
                                                     SLEEVE POSITION
                    : 38...42
                                                     Control-lever position
                                                                  Degree: -3
1/min: 800
Overflow valve
                                                     Speed
                    : 1 417 413 000
                                                     Cont.-rod travelmm: 0.30...0.70
                                                     Governor-spring reload
Inlet press., bar : 1.00
                                                     Notch setting x : 4.75
Calibrating nozzle-holder
                : 0 681 343 009
 . ⇒sembly
                                                     FULL-LOAD DELIV. AT FULL-LOAD STOP
Opening
                                                     1st version
 pressure, bar : 172...175
                                                     Speed 1/min: 1150
Charge press. hPa: 700
                                                                   1/min: 1150
                                                    Del.quantity cm3/: 108.0...110.0
1000H.: (106.0...112.0)
Dispersion cm3/: 3.00
Test inj. tubing : 1 680 750 014
                                                                  1000H.: (6.00)
Outside diameter
x Wall thickness
                  : 6.00x2.00x600
                                                     HIGHEST RATED SPEED
x Length mm
                                                     1st version
(A) Injection pump setting values
                                                     Control-lever
    Insp. values in parentheses
Set constant delivery quant.
                                                      position degrees: 52...60
                                                     Testing:
    per values
                                                     1st c-rod trav.mm : 10.80
                                                                 1/min : 1190...1200
START OF DELIVERY
                                                       Speed
                                                     2nd c-rod trav.mm: 4.00
Test pressure, bar: 25...27
                                                                 1/min : 1235...1265
                                                       Speed
                   : 1.90...2.00
                                                     3rd c-rod trav.mm: 4.00
Prestroke mm
                                                                1/min : 1285...1315
                   : (1.85...2.05)
                                                       Speed
Contr.-rod trav.mm: 9.00...12.00
                                                                  1/min : 1400
                                                     4th speed
G21
```

C-rcd trav.mm : 0.30...1.40 LOWEST RATED SPEED I Control-lever position degrees: 17...25 Setting point w/out aux. spring 1/min : 325 Speed Contr.-rod trav.mm: 6.8 Testing: Speed 1/min : 100 Crod trav.mm min: 19.50 Speed 1/min: 325 C-rod trav.mm : 6.70...6.90 : 2.00 C-rod trav.mm 1/min: 585...645 Speed TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1150 C-rod trav.mm : 11.80...11.90 2nd speed 1/min: 500 C-rod trav.mm : 11.80...12.00 compensator (LDA,ADA,ALDA) 1st version Setting 1/min : 500 Speed Pressure hPa : 700 Contr.-rod trav.mm: 11.80...11.90 Measurement Speed 1/min : 500 ist pressure hPa : 9.90...10.00 C-rod trav.mm 2nd pressure hPa : 220 C-rod trav.mm : 11.20...11.30 3rd pressure hPa : 140 C-rod trav.mm : 10.90...11.10 FUEL-DELIVERY CHARACTERISTICS 1st version Charge press. hPa: 700 Speed 1/min : 850 Del.quantity cm3/: 103.5...106.5 1000H.: (101.0...109.0) cm3/:-Dispersion 1000H.: (7.00) Charge press. hPa : -1/min : 500 Speed Del.quantity cm3/ : 62.0...64.0 1000H.: (60.0...66.0) SETTING CONTROL-ROD STOP

Speed 1/min : 500
ROTATIONAL-SPEED LIMITATION

1st version 1mm control-rod travel less than

full-load trav.mm: 10.80 Speed 1/min: 1190...1200

STARTING FUEL DELIVERY

Speed 1/min: 100
Del.quantity cm3/: 120.0...130.0
1000H.: (117.0...133.0)
Contr.-rod trav.mm: 15.50...15.90

Remarks: Check electrically unlatched starting fuel delivery (EES) with 24 volt.

The stop position of the control rod must be easily reached with the stop lever APPLICATION Installation 2300

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                         Contr.-rod trav.mm: 9.00...12.00
                                                         Cam seguence : 1-5-3-6-2-4
Note inst. in remarks column
Test sheet
                     : NB 5,7 V 18
                                                         SD ang. spacing ^{\circ} CS: 0-60-120-180-240-300 Tolerance + - ^{\circ} : 0.50 (0.75)
Edition
                     : 26.06.87
Superceeded
Calibrating oil : ISO-4113
                                                        BASIC SETTING
Combination no.
                     : 0 400 876 293
                                                         1st speed
                                                                        1/mi: 1400
Injection pump
Pump designation : PES6A90D410RS2596
                                                        Contr.-rod trav.mm: 11.90...12.00
EP type number
                     : 0 410 896 073
Governor
                                                        Del.quantity cm3/: 7.4...7.5
                     : RSV350...1400A0C1141
Governor design.
                                                                       100H.: (7.2...7.7)
                     : 0 420 232 423
Governer no.
                                                                       cm3/:0.3
                                                        Dispersion
Customer-spec. information
Customer
                                                                       100H.: (0.4)
                    : DAIMLER-BENZ
                                                        2nd speed 1/min: 350.0
Contr.-rod trav. m: 7.8...8.4
Del.quantity cm3/: 1.0...1.2
100H.: (0.8...1.4)
Engine
                     : 0M352A
1st version kW : 123.0
               1/min: 2800
Speed
                                                                       cm3/:0.2
                                                        Dispersion
TEST BENCH REQUIREMENTS
                                                                       100H.: (0.4)
Calibrating-oil inlet temp. °C
                                                        SLEEVE POSITION
                     : 38...42
                                                        Control-lever position
                                                                      Degree: -3
                                                                       17min: 800
Overflow valve
                     : 1 417 413 000
                                                        Cont.-rod travelmm: 0.30...0.70
                                                        Governor-spring reload
Inlet press., bar : 1.00
                                                        Notch setting x : 4.00
Calibrating nozzle-holder
                                                        FULL-LOAD DELIV. AT FULL-LOAD STOP
 assembly
              : 0 681 343 909
Opening
                                                        1st version
 pressure, bar : 172...175
                                                        Speed
                                                                       1/min: 1400
                                                        Charge press. hPa: 700
Del.quantity cm3/: 74.0...75.0
1000H.: (72.0...77.0)
Dispersion cm3/: 3.00
1000H.: (4.50)
Test inj. tubing : 1 680 750 014
Outside diameter
x Wall thickness
                                                        HIGHEST RATED SPEED
                     : 6.00x2.00x600
x Length mm
                                                        1st version
(A) Injection pump setting values
                                                        Control-lever
    Insp. values in parentheses
Set constant delivery quant.
                                                         position degrees: 66...74
    per values
                                                        Testing:
                                                        1st c-rod trav.mm : 10.90
Speed 1/min : 1435...1440
2nd c-rod trav.mm : 4.00
START OF DELIVERY
Test pressure, bar: 25...27
                                                                   1/min: 1475...1488
                                                          Speed
                    : 2.00...2.10
                                                        3rd c-rod trav.mm : 4.00
Prestroke mm
                                                                    1/min : 1520...1550
                     : (1.95...2.15)
                                                          Speed
G23
```

4th speed 1/min: 1680 : 0.30...1.40 C-rod trav.mm LOWEST RATED SPEED I Control-lever position degrees: -Setting point w/out aux. spring 1/min : 350 Speed Contr.-rod trav.mm: 8.1 Testing: 1/min : 100 Speed C-rod trav.mm min: 16.00 Speed 1/min: 350 C-rod trav.mm : 8.00...8.20 C-rod trav.mm : 2.00 1/min: 580...640 Speed TORQUE CONTROL Torque-control curve - 1st version 1/min : 1400 1st speed : 11.90...12.00 C-rod trav.mm 2nd speed 1/min : 900 C-rod trav.mm : 13.00...13.10 3rd speed 1/min : 1050 C-rod trav.mm : 12.50...12.70 4th speed 1/min: 1260 : 11.90...12.00 C-rod trav.mm compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 500 hPa : 700 Speed Pressure Contr.-rod trav.mm: 13.10...13.20 Measurement 1/min : 500 Speed 1st pressure hPa : 11.30...11.40 C-rod trav.mm : 500 2nd pressure hPa C-rod trav.mm : 12.60...12.70 3rd pressure hPa : 275 C-rod tray.mm : 11.60...11.80 FUEL-DELIVERY CHARACTERISTICS 1st version Charge press. hPa: 700 1/min : 900 Speed Del.quantity cm3/: 75.0...78.0 1000H.: (72.5...80.5) Charge press. hPa : -Speed 1/min : 500
Del.quantity cm3/ : 50.0...51.0 1000H.: (48.0...53.0)

STARTING FUEL DELIVERY

Speed 1/min: 100
Del.quantity cm3/: 78.0...88.0
1000H.: (75.0...91.0)
Contr.-rod trav.mm: 16.10...16.50

LOW IDLE

Remarks: Hydraulic latching of starting delivery.

Latching at 0.4 bar ... 0.5 bar.

Unlatching at 0.25 bar...0.35 bar.

APPLICATION Unimog

```
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 5- 3- 6- 2- 4
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
Test sheet
Edition
Superceeded
                    : LIE 8,4 A
: 28.08.87
                                                       SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
                    : 12.9.86
Calibrating oil : ISO-4113
                                                       START OF DELIVERY DIFFERENCE
Combination no.
                    : 0 400 876 322
                                                       betw.c-rod trav.mm: 8.50...9.50
Difference CS : 4.00...5.00
Injection pump
Pump designation : PES6A95D410RS2689
EP type number
                    : 0 410 896 916
                                                       BASIC SETTING
Governor
                    : RSV400...1000A1C2187
Governor design.
                                                       1st speed
                                                                    1/mi: 1000
                    : 0 420 232 387
                                                       Contr.-rod trav.mm: 9.70...9.80
Governer no.
Customer-spec. information
                                                       Del.guantity cm3/: 8.1...8.3
Customer
                   : LIEBHERR
                                                                      100H.: (7.9...8.5)
                    : D906 NA
Engine
                                                                      cm3/:0.3
                                                       Dispersion
1st version kW : 112.0
              1/min: 2000
Speed
                                                                      100H.: (0.6)
TEST BENCH REQUIREMENTS
                                                       2nd speed
                                                                      1/min: 400.0
                                                       Contr.-rod trav. m: 6.4...6.6
                                                       Del.quantity cm3/: 1.0...1.6
100H:: (0.7...1.8)
Dispersion cm3/: 0.3
100H:: (0.5)
Calibratino-oil inlet temp. OC
                    : 40...45
Overflow valve
                    : 1 417 413 000
                                                       SLEEVE POSITION
                                                       Control-lever position
Inlet press., bar: 1.50
                                                                    Degree: -3
Calibrating nozzle-holder
                                                       Speed
                                                                     17min: 800
              : 0 681 343 909
                                                       Cont.-rod travelmm: 0.30...0.70
 assembly
Opening
                                                       Governor-spring reload
 pressure, bar : 172...175
                                                       Notch setting x : 4.00
                                                       FULL-LOAD DELIV. AT FULL-LOAD STOP
Test in . tubing : 1 680 750 008
                                                       1st version
Outside diameter
                                                       Speed
                                                                      1/min: 1000
                                                       Del.quantity cm3/: 81.0...83.0
1000H.: (79.0...85.0)
Dispers: on cm3/: 3.50
1000H.: (6.00)
x Wall thickness
x Length mm
                    : 6.00x2.00x600
(A) Injection pump setting values
    Insp. values in parentheses
    Set constant delivery quant.
                                                       HIGHEST RATED SPEED
    per values
                                                       1st version
                                                       Control-lever
START OF DELIVERY
                                                        position degrees: 46...54
Test pressure, bar: 25...27
                                                       Testing:
Prestroke mm : 2.70...2.80
                                                       1st c-rod trav.mm: 8.70
                    : (2.65...2.85)
                                                                    1/min : 1040...1050
                                                         Speed
G25
```

```
2nd c-rod trav.mm : 4.00
  Speed 1/min: 1050...1080
3rd c-rod trav.mm : 4.00
           1/min : 1090...1220
  Speed
4th speed 1/min: 1230
  C-rod trav.mm : 0.30...1.40
LOWEST RATED SPEED I
Control-lever
 position degrees: 20...28
Setting point w/out aux. spring
           1/min : 400
Speed
Contr.-rod trav.mm: 6.0
Testing:
            1/min : 100
Speed
C-rod trav.mm min: 19.50
           1/min : 400
Speed
C-rod trav.mm
               : 6.40...6.60
C-rod trav.mm
                  : 2.00
           1/min : 530...590
Speed
TORQUE CONTROL
Torque-control curve - 1st version
           1/min : 1000
1st speed
  C-rod trav.mm : 9.70...9.80
2nd speed 1/min: 500
  C-rod trav.mm : 9.70...9.90
FUEL-DELIVERY CHARACTERISTICS
            1/min : 600
Speed
Del.quantity cm3/ : 70.0...73.0
            1000H.: (67.5...75.5)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 8.70
           1/min : 1040...1050
Speed
STARTING FUEL DELIVERY
Speed
            1/min : 100
Del.quantity cm3/: 120.0...130.0
            1000H.: (117.0...133.0)
Contr.-rod trav.mm: 19.50...21.00
LOW IDLE
           1/min : 400
Speed
Contr.-rod trav.mm: 6,40...6.60
Del.quantity cm3/: 10.0...16.0
            1000H.: (7.5...18.5)
cm3/: 3.50
1000H.: (5.50)
Dispersion
Remarks:
G26
```

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet Edition Superceeded : MB 6,0 C : 21.08.27 : 12.9.86 Calibrating oil : ISO-4113

Combination no. : 0 400 876 331

Injection pump

Pump designation : PES6A90D410RS2710 EP type number : 0 410 896 082

Governor

: RSV350...1400A0C2006 Governor design.

-2L

: 0 420 232 453 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: OM 366 Engine

1st version kW : 100.0 1/min: 2800 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Calibrating nozzle-holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values

START OF DELIVERY

Test pressure, bar: 25...27

: 2.25...2.35 Prestroke mm

: (2.20...2.40)

Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1-5-3-6-2-4 LOWEST RATED SPEED I Control-lever position degrees: 24...32 Setting point w/out aux. spring 1/min : 350 SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) Contr.-rod trav.mm: 8.1 Testing: BASIC SETTING 1/min : 100 Speed C-rod trav.mm min: 19.50 Speed 1/min: 350 Speed 1/min: 350 C-rod trav.mm : 8.00...8.20 : 2.00 1/mi: 1380 1st speed Contr.-rod trav.mm: 10.70...10.80 1/min : 480...540 Speed Del.quantity cm3/: 6.5...6.6 SET IDLE AUXILIARY SPRING 100H.: (6.3...6.8) Contr.-rod trav.mm: 2.00 Dispersion cm3/:0.3TORQUE CONTROL Torque-control curve - 1st version 1/min : 1380 100H.: (0.4) 1st speed C-rod trav.mm : 10.70...10.80 2nd speed 1/min: 350.0 2nd speed 1/min : 500 Contr.-rod trav. m: 8.0...8.2 C-rod trav.mm : 11.80...11.90 Del.quantity cm3/: 0.6...1.0 3rd speed 1/min: 900 100H.: (0.4...1.2) cm3/: 0.2 100H.: (0.4) C-rod trav.mm : 11.30...11.50 Dispersion FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 500 Del.quantity cm3/: 53.0...55.0 1000H:: (50.5...57.5) SLEEVE POSITION Control-lever position Degree: -3 cm3/:-Dispersion 17min: 800 1000H.: (5.50) Cont.-rod travelmm: 0.30...1.00 ROTATIONAL-SPEED LIMITATION Governor-spring reload Notch setting x : 4.50 1st version 1mm control-rod travel less than FULL-LOAD DELIV. AT FULL-LOAD STOP full-load trav.mm: 9.70 1st version Speed 1/min : 1430...1440 1/min: 1380 Speed Del.quantity cm3/: 65.0...66.0 1000H.: (63.0...68.0) Dispersion cm3/: 3.00 1000H.: (4.50) STARTING FUEL DELIVERY Speed 1/min: 100 Del.quantity cm3/: 78.0...88.0 1000H.: (75.0...91.0) HIGHEST RATED SPEED 1st version Control-lever LOW IDLE position degrees: 57...65 Testing: 1st c-rod trav.mm: 9.70 Sp∉ed 1/min : 1430...1440 2nd c-rod trav.mm: 4.00 1/min : 1490...1520 1000H.: (4.50) Speed 4th speed 1/min: 1650 C-rod trav.mm : 0.30...1.70 Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) Note inst. in remarks column : DAF 6,2 0 4 : 12.06.87 Test sheet Edition SD mark cyl. no. : 1 Superceeded Calibrating oil : ISO-4113 START OF DELIVERY DIFFERENCE betw.c-rod trav.mm: 8.50...9.50 Difference CS : 2.50...3.50 Combination no. : 0 400 876 341 Injection pump Pump designation : PES6A95D32ORS2693 BASIC SETTING EP type number : 0 410 896 914 1st speed 1/mi: 700 Governor Governor design. : RSV250...750A7C2206-Contr.-rod trav.mm: 11.60...11.70 18 : 0 420 233 209 Governer no. Del.quantity cm3/ : 7.0...7.2 Customer-spec. information 100H.: (6.8...7.4) Customer Engine : DNTD620 (1500é cm3/:0.3Dispersion TEST BENCH REQUIREMENTS 100H.: (0,6) Calibrating-oil inlet temp. °C 2nd speed 1/min: 300.0 : 38...42 Contr.-rod trav. m: 6.5...6.7 Del.quantity cm3/: 0.7...1.1 Overflow valve 100H.: (0.4...1.3) cm3/:0.3: 1 417 413 000 Dispersion 100H.: (0.5) Inlet press., bar: 1.50 SLEEVE POSITION Control-lever position Calibrating nozzle-holder : 0 681 343 009 Degree: -3 assembly 17min: 800 Speed Cont.-rod travelmm: 0.30...0.70 Opening pressure, bar : 172...175 Governor-spring reload Notch setting x : 5.25 Test inj. tubing : 1 680 750 015 FULL-LOAD DELIV. AT FULL-LOAD STOP Outside diameter x Wall thickness 1st version Speed 1/min: 700
Del.quantity cm3/: 70.0...72.0
1000H.: (68.0...74.0)
Dispersion cm3/: 3.50 : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. 1000H.: (6.00) per values HIGHEST RATED SPEED START OF DELIVERY 1st version Test pressure, bar: 25...27 Control-lever position degrees: 43...51 : 2.00...2.10 Prestroke mm : (1.95...2.15) Testing: 1st c-rod trav.mm : 10.60 Speed 1/min : 745...750 Contr.-rod tray mm: 9.00...12.00 Cam sequence : 1-5-3-6-2-4 2nd c-rod trav.mm : 4.00

**HO2** 

1/min: 775...790 Speed 4th speed 1/min: 935 C-rod trav.mm : 0.30...1.40 LOWEST RATED SPEED I Control-lever position degrees: 21...29 Setting point w/out aux. spring Speed ' 1/min : 300 Contr.-rod trav.mm: 6.6 Speed 1/min : 300 C-rod trav.mm : 6.50...6.70 C-rod trav.mm : 2.00 Speed 1/min : 310...370 SET IDLE AUXILIARY SPRING Contr.-rod trav.mm: 2.00 STARTING FUEL DELIVERY LOW IDLE 1/min : 300 Speed Contr.-rod trav.mm: 6.50...6.70
Del.quantity cm3/: 7.0...11.0
1000H.: (4.5...13.5)
Dispersion cm3/: 3.50 1000H.: (5.50)

```
: 1-5-3-6-2-4
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                         Cam sequence
Note inst. in remarks column
Test sheet
                                                         SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
                    : DAF 11.6 Y3
: 31.07.87
: 9.3.87
Edition
Superceeded
Calibrating oil : ISO-4113
                                                         BASIC SETTING
                     : 0 401 846 510
Combination no.
                                                         1st speed
                                                                         1/mi: 600
                                                         Contr.-rod trav.mm: 11.70...11.80
Injection pump
Pump designation : PE6P12OA32ORS415-1
                                                         Del.quantity cm3/: 17.4...17.6
EP type number
                  : 0 411 826 123
Governor
                                                                        100H.: (17.1...17.9)
Governor design. : RQ250/900PA754
Governer no.
                    : 0 421 801 288
                                                                        cm3/:0.5
                                                         Dispersion
Customer-spec. information
                                                                        100H.: (0.9)
Customer
                    : DAF
                     : DKX 1160E
                                                                        1/min: 250.0
Engine
                                                         2nd speed
                                                        Contr.-rod trav. m: 6.7...6.9
Del.quantity cm3/: 1.4...2.0
100h:: (1.1...2.3)
Dispersion cm3/: 0.8
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                     : 38...42
                                                                        100H.: (1.2)
                                                         SLEEVE POSITION
Overflow valve
                     : 1 417 413 025
                                                         Control-lever position
                                                                      Degree: -1
1/min: 850
                                                         Speed
Inlet press., bar: 1.50
                                                         Cont.-rod travelmm: 14.10...14.90
Calibrating nozzle-holder
                                                        FULL-LOAD DELIV. AT FULL-LOAD STOP
                : 1 688 901 019
 assembly
Opening
                                                         1st version
                                                        Speed 1/min: 600
Charge press. hPa: 700
Del.quantity cm3/: 174.0...176.0
1000H.: (171.0...179.0)
Dispersion cm3/: 5.00
1000H.: (9.00)
                     : 207...210
 pressure, bar
Perforated-plate
                     : 0,8
 diameter mm
Test inj. tubing : 1 680 750 067
                                                        HIGHEST RATED SPEED
Outside diameter
x Wall thickness
                                                         Setting point:
                                                                     1/min : 850
x Length mm
                  : 6.00x1.50x1000
                                                        Contr.-rod trav.mm: 14.5
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                        Testing:
                                                        1st c-rod trav.mm : 10.00
                                                           Speed 1/min: 925...940
    per values ____
                                                        2nd c-rod trav.mm : 4.00
                                                                     1/min : 995...1025
START OF DELIVERY
                                                           Speed
                                                                      1/min : 1150
Test pressure, bar: 25...27
                                                         4th speed
                                                           C-rod trav.mm : 0.00...1.00
                     : 2.80...2.90
Prestroke mm
                                                        LOWEST RATED SPEED I
                     : (2.75...2.95)
Contr.-rod trav.mm: 9.00...12.00
                                                        Setting point w/out aux. spring
H04
```

Speed 1/min : 250 Contr.-rod trav.mm: 6.5 Testing: Speed 1/min: 100 C-rod trav.mm min: 7.40 Speed 1/min : 250 C-rod trav.mm : 6.40...6.60 C-rod trav.mm : 2.00 1/min: 445...485 Speed TORQUE CONTROL Dimension a mm : 0.50 Torque-control curve - 1st version 1st speed 1/min: 875 C-rod trav.mm : 11.00...11.10 1/min : 600 2nd speed C-rod trav.mm : 12.00...12.20 3rd speed 1/min: 700 C-rod trav.mm : 11.60...11.80 4th speed 1/min: 760 C-rod trav.mm : 11.20...11.50 compensator (LDA,ADA,ALDA) 1st version Setting 1/min : 600 Speed hPa : 700 Pressure Contr.-rod trav.mm: 11.70...11.80 Measurement 1/min : 600 Speed 1st pressure hPa : -: 10.40...10.60 C-rod trav.mm 2nd pressure hPa : 300 C-rod trav.mm : 11.10...11.20 3rd pressure hPa : 250 C-rod trav.mm : 10.40...10.70 FUEL-DELIVERY CHARACTERISTICS 1st version Charge press. hPa : 700 1/min : 875 Del.quantity cm3/: 170.0...174.0 1000H.: (167.0...177.0) Charge press. hPa : -1/min : 600 Speed Del.quantity cm3/: 140.0...142.0 1000H.: (137.0...145.0) ROTATIONAL-SPEED LIMITATION 1st version

H05

1mm control-rod travel less than

full-load trav.mm: 10.00 Speed 1/min: 925...940

STARTING FUEL DELIVERY

Speed 1/min: 100 Del.quantity cm3/: 305.0...345.0

1000H.: (301.0...349.0) Contr.-rod trav.mm: 19.50...21.00

LOW IDLE

Speed 1/min: 250 Contr.-rod trav.mm: 6.40...6.60

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet Edition Superceeded : DAF 11,6 X1 : 10.08.87 : 9.3.87 Calibrating oil : 180-4113

: 0 401 846 530 Combination no.

Injection pump

Pump designation : PE6P110A32ORS407-1

EP type number : 0 411 816 147

Governor

Governor design. : RQ275/1000PA818 Governor no. : 0 421 801 360

Customer-spec. information Customer

: LT 160 Engine

1st version kW : 160.0 Speed 1/min: 2000

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. OC

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant.

per values \_\_\_\_

START OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Contr.-rod trav.mm: 9.00...12.00

```
Cam sequence
              : 1-5-3-6-2-4
                                                      Contra-rod trav.mm: 7.4
                                                      Testing:
                                                                    1/min : 100
                                                      Speed
SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
                                                      C-rod trav.mm min: 8.60
                                                                   1/min : 275
                                                      Speed
                                                      C-rod trav.mm : 7.30...7.50
BASIC SETTING
                                                      C-rod trav.mm
                                                                          : 2.00
                                                                   1/min: 350...390
                                                      Speed
1st speed
            1/mi: 600
                                                      TORQUE CONTROL
Contr.-rod trav.mm: 12.00...12.10
                                                      Dimension a mm : 0.60
                                                      Torque-control curve - 1st version
                                                      1st speed 1/min: 980
Del.quantity cm3/: 13.4...13.6
                                                         C-rod trav.mm : 11.00...11.10
              100H.: (13.1...13.8)
                                                      2nd speed 1/min: 550
                                                         C-rod trav.mm : 12.30...12.50
                                                      3rd speed 1/min : 745
Dispersion
              cm3/:0.4
                                                         C-rod trav.mm : 11.90...12.10
              100H.: (0.7)
                                                      4th speed 1/min: 880
                                                        C-rod trav.mm : 11.20...11.50
2nd speed 1/min: 275.0
Contr.-rod trav. m: 7.3...7.5
Del.quantity cm3/: 1.4...1.9
100H.: (1.1...2.1)
                                                      FUEL-DELIVERY CHARACTERISTICS
                                                      Speed
                                                                   1/min : 980
                                                      Del.quantity cm3/: 112.0...116.0
              cm3/: 0.4
100H.: (0.7)
Dispersion
                                                                    1000H.: (109.0...119.0)
                                                      ROTATIONAL-SPEED LIMITATION
SLEEVE POSITION
Control-lever position
                                                      1st version
             Degree: -1
                                                      1mm control-rod travel less than
              17min: 600
Speed
Cont.-rod travelmm: 15.60...16.40
                                                       full-load trav.mm: 10.00
                                                                   1/min: 1030...1045
                                                      Speed
FULL-LOAD DELIV. AT FULL-LOAD STOP
                                                      STARTING FUEL DELIVERY
1st version
              1/min: 600
Speed
Del.quantity cm3/: 134.0...136.0
1000H:: (131.5...138.5)
Dispersion cm3/: 4.00
                                                                    1/min : 100
                                                      Speed
                                                      Del.quantity cm3/: 245.0...285.0
                                                                    1000H.: (241.0...289.0)
                                                      Contr.-rod tray.mm: 19.50...21.00
             1000H.: (7.50)
HIGHEST RATED SPEED
                                                      LOW IDLE
                                                      Speed 1/min : 275
Contr.-rod trav.mm: 7.30...7.50
Setting point:
Speed
         1/min : 600
                                                      Del.quantity cm3/: 14.0...19.0
Contra-rod trav.mm: 16.0
                                                                   1000H.: (11.5...21.5)
cm3/: 4.50
1000H.: (7.50)
Testing:
                                                      Dispersion
1st c-rod trav.mm : 10.00
Speed 1/min : 1030...1045
2nd c-rod trav.mm : 4.00
                                                      Remarks:
            1/min : 1090...1120
                                                      On activation of the starting solenoid,
  Speed
             1/min : 1300
                                                      the start position must be reached.
4th speed
  C-rod tray.mm : 0.00...1.00
LOWEST RATED SPEED I
Setting point w/out aux. spring
Speed
            1/min : 275
```

**H07** 

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                           : 3.20...3.30
                                                       Prestroke mm
                                                                           : (3.15...3.35)
Note inst. in remarks column
                                                       Contr.-rod trav.mm: 9.00...12.00
                                                       Cam sequence : 1-5-3-6-2-4
Test sheet
Edition
Superceeded
                    : DAF 11,6M14
Edition : 10.08.87
Superceeded : 2.6.87
Calibrating oil : ISO-4113
                                                       SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Combination no.
                    : 0 401 846 542
                                                       BASIC SETTING
Injection pump
Pump designation : PE6P10DA32ORS384-1
                                                                       1/mi: 600
                                                       1st speed
                    : 0 411 806 189
EP type number
                                                       Contr.-rod trav.mm: 11.40...11.50
Governor
Governor design. : RQ225/1000PA868
Governer no. : 0 421 801 403
                                                       Del.quantity cm3/: 9.8...10.0
                                                                      100H.: (9.6...10.2)
Customer-spec. information
Customer
                    : DAF
                                                                      cm3/:0.3
                                                       Dispersion
                    : DKDL 1160 SB 220
Engine
                                                                      100H.: (0.6)
1st version kW : 220.0
                                                       2nd speed 1/min: 250.0
Contr.-rod trav. m: 7.5...7.7
Del.quantity cm3/: 0.9...1.3
          1/min: 2000
Speed
TEST BENCH REQUIREMENTS
                                                                      100H: (0.6...1.5)
cm3/: 0.3
100H: (0.5)
Calibrating-oil
inlet temp. °C
                                                       Dispersion
                    : 38...42
Overflow valve
                                                       SLEEVE POSITION
                    : 1 417 413 025
                                                       Control-lever position
                                                                     Degree: -1
                                                                     17min: 550
Inlet press., bar: 1.50
                                                       Cont.-rod travelmm: 15.20...16.40
Calibrating nozzle-holder
              : 0 681 343 009
                                                       FULL-LOAD DELIV. AT FULL-LOAD STOP
 assembly
Opening
                                                       1st version
 pressure, bar
                    ; 172...175
                                                                      1/min: 600
                                                       Speed
                                                       Del.quantity cm3/: 98.0...100.0
1000H: (96.0...102.0)
Dispersion cm3/: 3.50
1000H: (6.00)
Perforated-plate
 diameter mm
                    : 0,8
Test in . tubing
                   : 1 680 750 015
                                                       HIGHEST RATED SPEED
Outside diameter
                                                       Setting point:
x Wall thickness
                                                       Speed 1/min: 550
                    : 6.00x1.50x600
                                                       Contr.-rod trav.mm: 15.8
x Length mm
(A) Injection pump setting values
                                                       Testing:
    Insp. values in parentheses
Set constant delivery quant.
                                                       1st c-rod trav.mm : 9.60
                                                         Speed 1/min: 1045...1060
    per values
                                                       2nd c-rod trav.mm : 4.00
                                                       Speed 1/min: 1100...1130
4th speed 1/min: 1250
START OF DELIVERY
                                                         C-rod trav.mm : 0.00...1.00
Test pressure, bar: 25...27
но8
```

```
LOWEST RATED SPEED I
Setting point w/out aux. spring
            1/min : 250
Speed
Contr.-rod trav.mm: 7.6
Testing:
            1/min: 100
Speed
C-rod trav.mm min: 8.40
            1/min : 250
Speed
C-rod trav.mm
                : 7.50...7.70
C-rod trav.mm
                  : 2.00
            1/min : 345...385
Speed
TORQUE CONTROL
Torque-control curve - 1st version
            1/min : 600
1st speed
  C-rod trav.mm : 11.40...11.50
2nd speed 1/min: 1000
  C-rod trav.mm : 10.60...10.80
3rd speed 1/min: 820
u-rod trav.mm : 11.10...11.30
4th speed 1/min : 900
  C-rod trav.mm : 10.80...11.10
FUEL-DELIVERY CHARACTERISTICS
Speed
            1/min : 1000
Del.quantity cm3/: 93.0...97.0
            1000H.: (90.5...99.5)
SETTING CONTROL-ROD STOP
Speed
            1/min : 600
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 9.60
Speed
            1/min : 1045...1060
STARTING FUEL DELIVERY
Speed
            1/min : 100
Del.quantity cm3/: 180.0...220.0
            1000H.: (176.0...224.0)
Congr.-rod trav.mm: 19.50...21.00
LOW IDLE
Del.quantity cm3/ : 9.0...13.0
            1000H.: (6.5...15.5)
            cm3/: 3.50
1000H.: (5.50)
Dispersion
Remarks:
```

H09

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                         Test pressure, bar: 25...27
Note inst. in remarks column
                                                                               : 4.00...4.10
                                                         Prestroke mm
                                                                               : (3.95...4.15)
Test sheet
Edition
Superceeded
                                                         Contr.-rod tray.mm: 9.00...12.00
                    : MB 11,0 C 2
                    : 10.08.87
: 4.85
                                                         Cam sequence : 6- 3- 5- 2- 4-
Calibrating oil : ISO-4113
                                                         SD ang. spacing CS: 0-45-120-165-240-285
Tolerance + - : 0.50 (0.75)
                    : 0 401 846 748
Combination no.
Injection pump
Pump designation : PE6P110A320L$3805-10
                                                         SD mark cyl. no. : 6
EP type number : 0 411 816 740
                                                         BASIC SETTING
Governor
Governor design. : RQV300...1150PA524-4
Governer no. : 0 421 813 315
                                                                        1/mi: 1150
                                                         1st speed
                                                         Contr.-rod trav.mm: 11.70...11.80
Customer-spec. information
Customer
                    : DAIMLER-BENZ
                                                         Del.quantity cm3/: 13.2...13.4
Engine
                    : 0M421
                                                                         100H.: (12.9...13.6)
1st version kW : 159.0
Speed 1/min: 2300
                                                                        cm3/:0.4
                                                         Dispersion
2nd version kW : 159.0
              1/min: 2300
                                                                        100H.: (0.8)
Speed
TEST BENCH REQUIREMENTS
                                                                        1/min: 300.0
                                                         2nd speed
                                                         Contr.-rod trav. m: 7.8...8.0
Del.quantity cm3/: 1.2...1.8
100H.: (0.9...2.0)
Calibrating-oil inlet temp. °C
                     : 38...42
                                                                        em3/: 0.4
100H.: (0.7)
                                                         Dispersion
Overflow valve
                     : 1 417 413 025
                                                         1st speed
                                                                        1/min: 1150
                                                         Contr.-rod trav.mm: 12.5...12.6
Del.quantity cm3/: 12.8...13.0
100H.: (-)
Dispersion cm3/: 0.4
100H.: (0.8)
Inlet press., bar : 1.50
Overflow
 quantity min. 1/h: 100...120
Calibrating nozzle-holder
                                                                        1/min: 300
                                                         2nd speed
              : 0 681 343 009
                                                         Contr.-rod trav.mm: 8.30...8.50
 assembly
                                                         Del.quantity cm3/: 1.2...1.8
100H:: (-)
Dispersion cm3/: 0.4
100H:: (0.7)
Opening
 pressure, bar : 172...175
Test inj. tubing : 1 680 750 015
                                                         (B) Setting of injection pump with
                                                              externally-mounted governor
Outside diameter
x Wall thickness
                                                         SLEEVE TRAVELS
                                                         1st speed 1/min: 300
Steevo travel mm: 1.60...1.80
2nd speed 1/min: 800
                     : 6.00x1.50x600
x Length mm
(A) Injection pump setting values
                                                           Sleeve travel mm: 5.80...6.20
     Insp. values in parentheses
                                                         3rd speed 1/min: 1200
     Set constant delivery quant.
                                                           Sleeve travel mm: 8.20...8.40
    per values
                                                                       1/min: 1260
                                                         4th speed
                                                           Sleeve travel mm: 9.60...10.40
START OF DELIVERY
H10
```

```
SLEEVE POSITION
Control-lever position
Degree: -1
Speed 1/min: 1190
Cont.-rod travelmm: 15.20...17.80
FULL-LOAD DELIV. AT FULL-LOAD STOP
1st version
               1/min: 1150
Speed
Del.quantity cm3/: 132.0...134.0
1000H.: (129.5...136.5)
Dispersion cm3/: 4.00
1000H.: (8.00)
2nd version
               1/min: 1150
Speed
Del.quantity cm3/: 128.0...130.0
1000H.: (125.0...133.0)
             cm3/ : 4.0
1000H.: (8.0)
Dispersion
HIGHEST RATED SPEED
ist version
Control-lever
 position degrees: 51...59
Testina:
1st c-rod trav.mm: 10.70
          1/min: 1190...1200
  Speed
2nd c-rod trav.mm : 4.00
            1/min: 1240...1270
  Speed
             1/min : 1400
4th speed
  C-rod trav.mm
                    : 0.00...1.00
2nd version
Control-lever
 position degrees: 61...69
Testing:
1st c-rod trav.mm : 11.50
             1/min : 1190...1200
  Speed
2nd c-rod trav.mm: 4.00
             1/min : 1240...1270
  Speed
             1/min : 1400
4th speed
  C-rod trav.mm : 0.00...1.00
LOWEST RATED SPEED I
Control-lever
 position degrees: 18...26
Testing:
Speed
             1/min : 100
C-rod trav.mm min: 9.50
             1/min : 300
Speed
                    : 7.80...8.00
C-rod trav.mm
CONSTANT REGULATION
             1/min : 300...450
Speed
```

SWITCH-OVER POINT 1/min : 220 (240) Speed FUEL-DELIVERY CHARACTERISTICS Speed 1/min : 600 Del.quantity cm3/: 110.0...114.0 1000H.: (107.0...117.0) cm3/: 6.00 Dispersion 1000H.: (9.00) 1/min : 600 Speed Del.quantity cm3/: 120.0...124.0 1000H.: (117.0...127.0) Dispersion cm3/: 6.0 1000H.: (9.0) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 10.70 1/min : 1190...1200 Speed 2nd version 1mm control-rod travel less than full-load trav.mm: 11.50 1/min: 1190...1200 Speed STARTING FUEL DELIVERY 1/min: 100 Del.quantity cm3/: 130.0...150.0 1000H.: (126.0...154.0) Remarks: See VDT-I-401/102.

Version 1: Without return-flow restriction
Version 2: With return-flow restriction

: 2.60...2.70 : (2.55...2.75) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note inst. in remarks column Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 5- 3- 6- 2- 4 Test sheet Edition Superceeded : VOL 12.0 K : 24.07.87 : 12.9.86 SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) Calibrating oil : ISO-4113 Combination no. : 0 401 846 772 SD mark cyl. no. : 1 Injection pump Pump designation : PE6P12OA32ORS3118 BASIC SETTING EP type number : 0 411 826 726 1st speed 1/mi: 700 Governor Governor design. : RQV250...1025PA657 Contr.-rod trav.mm: 13.30...13.40 Governer no. : 0 421 813 368 Del.quantity cm3/: 23.8...24.0 Customer-spec. information Customer : VOLVO 100H.: (23.5...24.3) : TD 121 F Engine cm3/:0.5Dispersion 1st version kW : 282.4 1/min: 2050 100H.: (0.9) Speed 2nd speed 1/min: 250.0 Contr.-rod trav. m: 3.3...3.5 Del.quantity cm3/: 1.8...2.3 Dispersion cm3/: 0.5 TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. °C : 38...42 100H.: (0.7) Overflow valve : 1 417 413 025 (B) Setting of injection pump with externally-mounted governor Inlet press., bar : 1.50 SLEEVE TRAVELS Calibrating nozzle-holder 1st speed 1/min: 250 Sleeve travel mm: 1.10...1.30 assembly : 1 688 901 019 2nd speed 1/min: 500 Opening Sleeve travel mm: 4.10...4.90 pressure, bar : 207...210 3rd speed 1/min: 700 Sleeve travel mm: 6.30...6.70 4th speed 1/min: 900 Sleeve travel mm: 6.30...6.70 Perforated-plate : 0,8 diameter mm 5th speed 1/min: 1025 Sleeve travel mm: 7.30...7.90 Test inj. tubing : 1 680 750 067 SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 17min: 1080 : 6.00x1.50x1000 x Length mm Speed Cont.-rod travelmm: 15.20...17.80 (A) Injection pump setting values FULL-LOAD DELIV. AT FULL-LOAD STOP Insp. values in parentheses Set constant delivery quant. per values 1st version Speed 1/min: 700 Charge press. hPa : 1200 START OF DELIVERY Del.quantity cm3/: 238.5...240.5 1000H.: (235.5...243.5) Test pressure, bar: 25...27

Dispersion cm3/ : 5.00 1000H.: (9.00) HIGHEST RATED SPEED 1st version Control-lever position degrees: 61...69 Testing: 1st c-rod tray.mm : 12.30 Speed 1/min: 1085...1095 2nd c-rod trav.mm : 4.00 Speed 1/min: 1150...1180 4th speed 1/min: 1250 C-rod tray.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 6...14 Testing: 1/min : 100 Speed C-rod trav.mm min : 4.80 Speed 1/min : 250 C-rod trav.mm : 3.30...3.50 C-rod trav.mm : 2.00 1/min : 285...345 Speed compensator (LDA\_ADA\_ALDA) 1st version Setting Speed 1/min: 500 Pressure hPa: 1200 Contr.-rod trav.mm: 13.30...13.40 Measurement 1/min : 500 Speed 1st pressure hPa : -C-rod trav.mm : 8.60...8.80 2nd pressure hPa : 780 C-rod trav.mm : 13.10...13.20 3rd pressure hPa : 100 C-rod trav.mm : 9.10...9.40 FUEL-DELIVERY CHARACTERISTICS Speed 1/min : 700 Del.quantity cm3/: 139.0...141.0 1000H.: (136.0...144.0) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 12.30 1/min : 1085...1095 Speed

MIDDLE RATED SPEED Contr.-rod trav.mm: 4.00

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 240.0...280.0
Contr.-rod trav.mm: 20.00...21.00

LOW IDLE

Remarks:
Delivery-valve spring pre-tension = 2.40...2.60 mm.
Permissible alteration from 2.20...2.90 mm

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                              : 2.60...2.70
                                                         Prestroke mm
                                                         : (2.55...2.75)
Contr.-rod trav.mm: 9.00...12.00
Note inst. in remarks column
                                                         Cam sequence : 1- 5- 3- 6- 2- 4
Test sheet
Edition
Superceeded
                    : VOL 12,0 I
                    : 24.07.87
                    : 25.9.86
                                                         SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - 0.50 (0.75)
Calibrating oil : ISO-4113
Combination no.
                    : 0 401 846 773
                                                         SD mark cyl. no. : 1
Injection pump
Pump designation : PE6P120A320RS3116
                                                         BASIC SETTING
EP type number : 0 411 826 727
                                                                      1/mi: 700
Governor
                                                         1st speed
Governor design. : RQV250...1025PA657
                                                         Contr.-rod trav.mm: 11.40...11.50
Governer no. : 0 421 813 368
                                                         Del.quantity cm3/ : 19.6...19.8
Customer-spec. information
Customer
                    : VOLVO
                                                                        100H.: (19.3...20.1)
                    : TD 120 G
Engine
                                                                        cm3/: 0.5
                                                         Dispersion
1st version kW : 242.7
              1/min: 2050
                                                                        100H.: (0.9)
Speed
                                                        2nd speed 1/min: 250.0

Contr.-rod trav. m: 5.5...5.7

Del.quantity cm3/: 1.8...2.3

100H.: (1.5...2.6)

Dispersion cm3/: 0.5

100H.: (0.7)
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                    : 38...42
Overflow valve
                     : 1 417 413 025
                                                         (B) Setting of injection pump with externally-mounted governor
Inlet press., bar : 1.50
Calibrating nozzle-holder
                                                         SLEEVE TRAVELS
                                                         1st speed 1/min: 250
                 : 1 688 901 019
 assembly
                                                           Sleeve travel mm: 1.10...1.30
                                                        2nd speed 1/min: 500
Opening
pressure, bar : 207...210
                                                         Steeve travel mm: 4.10...4.90 3rd speed 1/min: 700
                                                         Sleeve travel mm: 6.30...6.70
4th speed 1/min: 900
Sleeve travel mm: 6.30...6.70
Perforated-plate
diameter mm
                     : 0,8
                                                        5th speed 1/min: 1025
Sleeve travel mm: 7.30...7.80
Test inj. tubing : 1 680 750 067
                                                        SLEEVE POSITION
Outside diameter
x Wall thickness
                                                        Control-lever position
                                                                      Degree: -1
1/min: 1080
                     : 6.00x1.50x1000
x Length mm
                                                        Speed
                                                        Cont.-rod travelmm: 15.20...17.80
(A) Injection pump setting values
    Insp. values in parentheses
                                                        FULL-LOAD DELIV. AT FULL-LOAD STOP
    Set constant delivery quant.
    per values ____
                                                         1st version
START OF DELIVERY
                                                                        1/min: 700
                                                        Speed
                                                        Charge press. hPa: 700
Test pressure, bar: 25...27
```

```
Del.quantity cm3/: 196.5...198.5
1000H.: (193.5...201.5)
Dispersion cm3/: 5.00
             1000H.: (9.00)
HIGHEST RATED SPEED
1st version
Control-lever
 position degrees: 58...66
Testing:
1st c-rod trav.mm : 10.40
  Speed 1/min: 1065...1075
2nd c-rod trav.mm : 4.00
           1/min : 1125...1155
  Speed
4th speed 1/min: 1250
  C-rod trav.mm : 0.00...1.00
LOWEST RATED SPEED I
Control-lever
 position degrees: 6...14
Testing:
Speed
             1/min : 100
C-rod trav.mm min : 7.00
Speed
            1/min : 250
C-rod trav.mm : 5.50...5.70
C-rod trav.mm : 2.00
Speed 1/min : 350...410
 compensator (LDA, ADA, ALDA)
1st version
Setting
            1/min : 500
hPa : 700
Speed
Pressure
Contr.-rod trav.mm: 11.40...11.50
Measurement
            1/min : 500
Speed
1st pressure hPa : -
  C-rod trav.mm : 9.00...9.10
2nd pressure hPa : 450
  C-rod trav.mm : 11.20...11.30
3rd pressure hPa : 170
  C-rod trav.mm : 9.30...9.60
FUEL-DELIVERY CHARACTERISTICS
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 10.40
H15
```

Speed 1/min : 1065...1075

MIDDLE RATED SPEED

Contr.-rod trav.mm: 4.00

STARTING FUEL DELIVERY

LOW IDLE

Speed 1/min : 250 Contr.-rod trav.mm: 5.50...5.70 Del.quantity cm3/: 18.0...23.0 1000H.: (15.0...26.0) Dispersion cm3/: 5.00 1000H.: (7.00)

Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                            : 2,80...2,90
: (2,75...2,95)
                                                       Prestroke mm
Note inst. in remarks column
                                                       Contr.-rod trav.mm: 9,00...12,00
Test sheet
Edition
Superceeded
                   : MAN 11.9 A9
: 18.8.87
                                                                           : 6- 2- 4- 1- 5- 3
                                                       Cam sequence
                   : 10.85
Calibrating oil : ISO-4113
                                                       SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Combination no.
                   : 0 402 036 047
Injection pump
                                                       SD mark cyl. no.
                                                                            : 6
Pump designation : PES6P120A720/3
                     LS470-3
                                                       BASIC SETTING
EP type number
                   : 0 412 026 051
                                                                       1/mi: 750
Governor
                                                       1st speed
Governor design. : RQ25D/1100PA679
Governer no.
                                                       Contr.-rod trav.mm: 12,70...12,80
                    : 0 421 801 228
Customer-spec. information
                                                       Del.quantity cm3/: 23,0...23,2
Customer
                    : MAN
                                                                      100H.: (22,7...23,5)
Engine
                    : D2866KUL
                                                       Dispersion
                                                                      cm3/:0.5
1st version kW : 265.0
Speed
              1/min: 2200
                                                                      100H.: (0,9)
TEST BENCH REQUIREMENTS
                                                                      1/min: 250,0
                                                       2nd speed
                                                       Contr.-rod trav. m: 5.6...5,8

Del.quantity cm3/: 1.2...1,8

100H.: (0.9...2,1)

Dispersion cm3/: 0,8
Calibrating-oil inlet temp. C
                    : 38...42
Cverflow valve
                                                                      100H.: (1,2)
                    : 1 417 413 025
                                                       SLEEVE POSITION
Inlet press., bar : 1.50
                                                       Control-lever position
                                                                     Degree: 45...47
                                                                      17min: 600
Calibrating nozzle-holder
                   : 1 688 901 019
                                                       Cont.-rod travelmm: 19,20...20,80
 assembly
                                                       FULL-LOAD DELIV. AT FULL-LOAD STOP
Opening
 pressure, bar
                    : 207...210
                                                       1st version
Perforated-plate
                                                                      1/min: 750
                                                       Speed
 diameter mm
                                                       Charge press. hPa : 1000
                    : 0,8
                                                       Del.quantity cm3/: 230,0...232,0
1000H: (227,0...235,0)
Dispersion cm3/: 5,0
Test inj. tubing : 1 680 750 067
                                                                     1000H.: (9,0)
Outside diameter
x Wall thickness
                                                       HIGHEST RATED SPEED
x Length mm
                   : 6,00x1,50x1000
                                                       1st version
                                                       Control-lever
(A) Injection pump setting values
                                                        position degrees: -
    Insp. values in parentheses
Set constant delivery quant.
                                                       Setting point:
                                                                    1/min : 600
    per values ____
                                                       Contr.-rod trav.mm: 20.0
START OF DELIVERY
Test pressure, bar: 25...27
                                                       Testing:
```

H21

1st c-rod trav.mm : 10,90 1st version 1/min : 1145...1160 Charge press. hPa: 1000 Speed 2nd c-rod trav.mm : 4,00 1/min : 1100 Speed Del.quantity cm3/: 219,0...223,0 1000H.: (216,0...226,0) Speed 1/min: 1185...1215 4th speed 1/min: 1350 : 0,00...1,00 C-rod trav.mm Charge press. hPa : 1000 Speed 1/min : 650 LOWEST RATED SPEED I Del.quantity cm3/: 231,0...237,0 Control-lever 1000H.: (228,0...240,0) position degrees: 8...16 Charge press. hPa: 400 1/min : 500 Setting point w/out aux. spring Speed Del.quantity cm3/: 179,0...191,0 1000H.: (176,0...194,0) 1/min : 250 Speed Contr.-rod trav.mm: 5.7 Charge press. hPa : -Testing: 1/min : 500 Speed Del.quantity cm3/: 128,0...130,0 Speed 1/min : 100 C-rod trav.mm min: 7.20 Speed 1/min: 250 1000H.: (125,0...133,0) : 5,70 C-rod trav.mm ROTATIONAL-SPEED LIMITATION C-rod trav.mm : 2,00 1/min: 330...370 Speed 1st version 1mm control-rod travel less than TORQUE CONTROL : 0.40 Dimension a mm full-load trav.mm: 10,90 1/min : 1145...1160 Torque-control curve - 1st version Speed 1/min : 750 1st speed : 13,00...13,10 STARTING FUEL DELIVERY C-rod trav.mm 1/min : 1100 2nd speed C-rod trav.mm : 11,90...12,00 3rd speed 1/min : 965 \$peed 1/min : 100
Del.quantity cm3/ : 225,0...245,0 C-rod trav.mm : 12,60...12,80 4th speed 1/min : 1010 1000H.: (221,0...249,0) C-rod trav.mm : 12,30...12,60 LOW IDLE compensator (LDA,ADA,ALDA) 1/min : 250 Speed Contr.-rod trav.mm: 5.60...5.80
Del.quantity cm3/: 12.0...18.0
1000H.: (9.0...21.0)
Dispersion cm3/: 8.0 1st version Setting 1/min : 500 Speed : 1000 1000H.: (12.0) hPa Pressure Contr.-rod trav.mm: 12,70...12,80 Remarks: Measurement 1/min : 500 Speed 1st pressure hPa : 9,40...9,50 : 130 C-rod trav.mm 2nd pressure hPa C-rod trav.mm : 9,70...9,80 : 400 3rd pressure hPa C-rod trav.mm : 11,10...11,50 SWITCH-OVER POINT 1/min : 190 (210) Speed FUEL-DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet Edition Superceeded : MAN 11.9A26 : 31.07.87 Calibrating oil : ISO-4113 Combination no. : 0 402 036 049 Injection pump Pump designation : PES6P120A720/3LS470-: 0 412 026 050 EP type number Governor Governor design. : RQ300/1100PA658-23 Governer no. : 0 421 801 391 Customer-spec. information Customer : D2866MUH Engine 1st version kW : 265.0 1/min: 2200 Speed TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar : 1.50 Calibrating nozzle-holder assembly : 1 688 901 019 Opening pressure, bar : 207...210 Perforated-plate diameter mm : 0.8 Test inj. tubing : 1 680 750 067 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values \_\_\_\_

START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.8 : (2. Contrrod trav.mm: 9.0 Cam sequence : 6-	.752.95} I	Speed 1/min: 11801210 4th speed 1/min: 1300 C-rod trav.mm: 0.001.00  LOWEST RATED SPEED I Control-lever position degrees: 715 Setting point W/out aux. spring
SD ang. spacing CS: 0-6 Tolerance + - : 0.5	60-120-180-240-300 50 (0.75)	Speed 1/min: 300 Contrrod trav.mm: 4.9
SD mark cyl. no. : 6		Testing: Speed 1/min: 100
BASIC SETTING	1	C-rod trav.mm min : 6.40
1st speed 1/mi: 750	)	Speed 1/min: 300 C-rod trav.mm: 4.90 C-rod trav.mm: 2.00
Contrrod trav.mm: 12.	.5012.60	Speed 1/min: 345385
Del.quantity cm3/: 23.	.824.0	TORQUE CONTROL
100H.: (23	3,524.3)	Dimension a mm : 0.65 Torque-control curve - 1st version
Dispersion cm3/: 0.5	5	1st speed 1/min: 750 C-rod trav.mm: 12.6012.90
100H.: (0.	,9)	2nd speed 1/min: 1100 C-rod trav.mm: 11.3011.40
2nd speed 1/min: 300 Contrrod trav. m: 4.8 Del.quantity cm3/: 1.2 100H.: (0. Dispersion cm3/: 0.8 100H.: (1.	35.0 21.8 .92.1)	3rd speed 1/min: 935 C-rod trav.mm: 12.1012.50 4th speed 1/min: 990 C-rod trav.mm: 11.8012.10 compensator (LDA,ADA,ALDA)
SLEEVE POSITION Control-lever position Degree: 45. Speed 1/min: 600 Cont,-rod travelmm: 19.	)	1st version Setting Speed 1/min: 500 Pressure hPa: 1000 Contrrod trav.mm: 12.5012.60
FULL-LOAD DELIV. AT FUL	L-LOAD STOP	Measurement Speed 1/min: 500
1st version Speed 1/min: 750 Charge press. hPa: 100 Del.quantity cm3/: 238 1000H.: (23 Dispersion cm3/: 5.0 1000H.: (9.	00   1 3.0240.0   1 35.0243.0)   1	1st pressure hPa : -     C-rod trav.mm : 8.608.70 2nd pressure hPa : 190     C-rod trav.mm : 8.909.00 3rd pressure hPa : 520     C-rod trav.mm : 11.1011.40
HIGHEST RATED SPEED	1	SWITCH-OVER POINT
Setting point: Speed 1/min: 600 Contrrod trav.mm: 20.	) (	Speed 1/min : 190 (210) FUEL-DELIVERY CHARACTERISTICS
Testing: 1st c-rod trav.mm : 10. Speed 1/min : 114. 2nd c-rod trav.mm : 4.0	<b>51160</b> I	1st version Charge press. hPa : 1000 Speed 1/min : 1100

Del.quantity cm3/: 213.0...219.0 1000H.: (210.0...222.0) Charge press. hPa: 1000 1/min : 650 Speed Del.quantity cm3/: 239.0...245.0 1000H.: (236.0...248.0) Charge press. hPa : 520 1/min : 500 Speed Del.quantity cm3/: 188.9...200.0 1000H.: (185.0...203.0) Charge press. hPa : -Speed 1/min : 500 Del.quantity cm3/: 115.0...117.0 1000H.: (112.0...120.0) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 10.30 Speed 1/min : 1145...1160 STARTING FUEL DELIVERY Speed 1/min : 100 Del.quantity cm3/: 225.0...245.0 1000H.: (221.0...249.0) LOW IDLE Speed 1/min : 300 Contr.-red trav.mm: 4.80...5.00 Del.quantity cm3/: 12.0...18.0 1000H.: (9.0...21.0) Dispersion cm3/: 8.00 1000H.: (12.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11.9/ Edition : 22.05.87 Superceeded : 12.86 Calibrating oil : ISO-4113 : MAN 11,9A25

Combination no. : 0 402 036 050

Injection pump

Pump designation : PES6P120A720/3LS470-

EP type number : 0 412 026 050

Governor

Governor design. : RQ300...1100PA684-3

Governer no. : 0 421 801 356

Customer-spec. information Customer

: D2866KF/K Engine

1st version kW : 265.0 1/min: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder : 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Perforated-plate

diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values

START OF DELIVERY

Test pressure, bar: 25...27

1/min : 1180...1210 1/min : 1300 Speed : 2.80...2.90 : (2.75...2.95) Prestroke mm 4th speed C-rod trav.mm : 0.00...1.00 Contr.-rod trav.mm: 9.00...12.00 : 6-2- 4- 1- 5- 3 LOWEST RATED SPEED I Cam sequence Setting point w/out aux. spring Speed 1/min : 300 Contra-rod travamm: 4.8 SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) Testing: Speed 1/min : 100 SD mark cyl. no. : 6 Cood trav.mm min : 6.30 1/min : 300 Speed : 4.80 BASIC SETTING C-rod trav.mm : 2.00 C-rod trav.mm 1/min: 345...405 1/mi: 750 1st speed Speed Contr.-rod trav.mm: 12.20...12.30 TORQUE CONTROL Dimension a mm : 0.55 Del.quantity cm3/: 22.8...23.0 Torque-control curve - 1st version 1st speed 1/min: 750 100H.: (22.5...23.3) C-rod trav.mm : 12.50...12.70 1/min : 1100 2nd speed C-rod trav.mm : 11.20...11.30 Dispersion cm3/:0.53rd speed 1/min: 935 G-rod trav.mm : 12.00...12.30 100H.: (0.9) 4th Speed 1/min: 990 2nd speed 1/min: 300.0 C-rod trav.mm : 11.60...11.90 Contr.-rod trav. m: 4.7...4.9 Del.quantity cm3/: 1.2...1.8 compensator (LDA\_ADA\_ALDA) 100H.: (0.9...2.1) Dispersion cm3/:0.8100H.: (1.2) 1st version Setting 1/min : 500 hPa : 1000 SLEEVE POSITION ેpeed -Control-lever position Pressure Contr.-rod trav.mm: 12.20...12.30 Degree: 45...47 17min: 600 Speed Cont.-rod travelmm: 19.20...20.80 Measurement 1/min : 500 Speed FULL-LOAD DELIV. AT FULL-LOAD STOP 1st pressure hPa : -C-rod trav.mm : 9.30...9.50 1st version 1/min: 750 2nd pressure hPa : 120 Speed Charge press. hPa : 1000 C-rod trav.mm : 9.60...9.70 Del.quantity cm3/: 228.0...230.0 1000H.: (225.0...233.0) 3rd pressure hPa : 400 : 11.00...11.40 C-rod trav.mm cm3/ : 5.00Dispersion 1000H.: (9.00) SWITCH-OVER POINT HIGHEST RATED SPEED Speed 1/min : 220 (240) FUEL-DELIVERY CHARACTERISTICS Setting point: 1/min : 600 Speed Contr.-rod trav.mm: 20.0 1st version Charge press. hPa: 1000 Testing: Speed 1/min: 1100 Del.quantity cm3/: 210.0...214.0 1000H.: (207.0...217.0) 1st c-rod trav.mm : 10.20 Speed 1/min : 1145...1160 2nd c-rod trav.mm : 4.00 H27

```
Charge press. hPa : 1000
Speed 1/min: 650
Del.quantity cm3/: 228.0...234.0
1000H.: (225.0...237.0)
Charge press. hPa: 400
                1/min : 500
Speed
Del.quantity cm3/: 188.0...200.0
1000H.: (185.0...203.0)
Speed 1/min: 500
Del.quantity cm3/: 139.0...141.0
1000H.: (136.0...144.0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 10.20
               1/min: 1145...1160
Speed
STARTING FUEL DELIVERY
                1/min : 100
Speed
De..quentity cm3/: 225.0...245.0
1000H.: (221.0...249.0)
LOW IDLE
Speed
                1/min : 300
Contr.-rod trav.mm: 4.70...4.90
Del.quantity cm3/: 12.0...18.0
1000H:: (9.0...21.0)
                cm3/: 8.00
1000H.: (12.00)
Dispersion
Remarks:
                         : MAN-NR. 2-7598
```

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9A16 : 18.8.87 Edition Superceeded : 9.86 Calibrating oil : ISO-4113

Combination no. : 0 402 036 059

Injection pump

: PES6P120A720/3 Pump designation

LS470-2

EP type number : 0 412 026 050

Governor

Governor design. : RQV300...1100PA669-1 Governer no. : 0 421 813 534

Customer-spec. information Customer

Engine : D2866KUHK

1st version kW : 265.0 Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. OC

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Calibrating nozzle-holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Perforated-plate

diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter

x Wall thickness

: 6,00x1,50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values \_\_\_\_

START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2,80...2,90 HIGHEST RATED SPEED : (2,75...2,95) 1st version Contr.-rod trav.mm: 9,00...12,00 Control-lever Cam sequence : 6-2-4-1-5-3 position degrees: 60...68 Testing: 1st c-rod trav.mm : 10.30 Speed 1/min : 1140...1150 SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0,50 (0,75) 2nd c-rod trav.mm: 4,00 Speed 1/min: 1225...1255 4th speed 1/min: 1350 SD mark cyl. no. : 6 C-rod trav.mm : 0,00...1,00 BASIC SETTING LOWEST RATED SPEED I 1/mi: 750 Control-lever 1st speed position degrees: 6...14 Contr.-rod trav.mm: 12,50...12.60 Testing: Del.quantity cm3/: 23,8...24,0 1/min : 100 Speed C-rod trav.mm min : 6,40 Speed 1/min : 300 C-rod trav.mm : 4,80...5,00 C-rod trav.mm : 2,00 Speed 1/min : 360...420 100H.: (23,5...24,3) Dispersion cm3/: 0,5 100H.: (0,9) TORQUE CONTROL Dimension a mm : 1,15
Torque-control curve - 1st version
1st speed 1/min : 750
C-rod trav.mm : 12,50...12,60
2nd speed 1/min : 1100 1/min: 250 2nd speed Contr.-rod trav. m: 4,80...5,09
Del.quantity cm3/: 1,2...1,8
100H.: (0,9...2,1)
Dispersion cm3/: 0,8 100H.: (1,2) C-rod trav.mm : 11,30...11,40 3rd speed 1/min : 900 C-rod trav.mm : 12,10...12,30 4th speed 1/min : 1000 (B) Setting of injection pump with externally-mounted governor C-rod trav.mm : 11,50...11,80 SLEEVE TRAVELS 1st speed 1/min: 300 Sleeve travel mm: 1,70...2,00 2nd speed 1/min: 850 compensator (LDA, ADA, ALDA) Sleeve travel mm: 6,00...6,20 1st version 3rd speed 1/min: 1100 Setting 1/min : 500 hPa : 1000 Sleeve travel mm: 8,10...8,30 Speed -Pressure SLEEVE POSITION Contr.-rod trav.mm: 12,50...12,60 Control-lever position Measurement Degree: -1 17min: 1130 1/min : 500 Speed Cont.-rod travelmm: 15,20...17,80 1st pressure hPa : -C-rod trav.mm : 8,60...8,70
2nd pressure hPa : 190
C-rod trav.mm : 8,90...9,00
3rd pressure hPa : 520 FULL-LOAD DELIV. AT FULL-LOAD STOP 1st version 1/min: 750 Speed C-rod trav.mm : 11,10...11,40 Charge press. hPa : 1000 Del.quantity cm3/: 238.0...240.0 1000H.: (235.0...243.0) Dispersion cm3/: 5.0 1000H.: (9.0) SWITCH-OVER POINT Speed 1/min: 220 (240)

J02

## FUEL-DELIVERY CHARACTERISTICS

```
1st version
Charge press. hPa : 1000
Speed
               1/min : 1100
1000H:: (210,0...219,0
1000H:: (210,0...222,0)
Charge press. hPa: 1000
Speed 1/min
Del.quantity cm3/: 239.0...245.0
1000H.: (236,0...248,0)
Charge press. hPa : 520
               1/min: 500
Speed
Del.quantity cm3/: 188,0...200,0
               1000H.: (188,0...200,0)
Charge press. hPa :
Speed 1/min: 500
Del.quantity cm3/: 115.0...117.0
1000H.: (112,0...120,0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 10,30
Speed
               1/min : 1140...1150
STARTING FUEL DELIVERY
LOW IDLE
Speed
               1/min : 250
Contr.-rod trav.mm: 4,80...5.00

Del.quantity cm3/: 12,0...18,0

1000H.: (9,0...21,0)

Dispersion cm3/: 8,0
               1000H.: (12,0)
Remarks:
                       : MAN-NR, 2-7734
APPLICATION
0mn ibus
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BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                       Prestroke mm : 2,80...2,90 : (2,75...2,95)
Contr.-rod trav.mm: 9,00...12,00
Note inst. in remarks column
                    : MAN 11,9A22
: 18.8.87
                                                                           : 6-2-4-1-5-3
Test sheet
                                                       Cam sequence
Edition
                    : 9.86
Superceeded
Calibrating oil
                  : ISO-4113
                                                       SD ang. spacing ^{0}CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Combination no.
                    : 0 402 036 061
Injection pump
                                                       SD mark cyl. no. : 6
Pump designation : PES6P120A720/3
                                                       BASIC SETTING
                     LS470-2
                    : 0 412 026 050
EP type number
                                                                       1/mi: 750
Governor
                                                       1st speed
Governor design. : RQV300...1100PA700-2
                                                       Contr.-rod trav.mm: 10,30...10,40
Governer no.
                    : 0 421 813 543
                                                       Del.quantity cm3/: 18,3...18,5
Customer-spec. information
Customer
                                                                      100H.: (18,0...18,8)
Engine
                    : D2866LFZ/290
                                                                      cm3/:0.5
                                                       Dispersion
1st version EW : 213.0
Speed
               1/min: 2200
                                                                      100H.: (0,9)
TEST BENCH REQUIREMENTS
                                                                      1/min: 300,0
                                                       2nd speed
                                                       Contr.-rod trav. m: 4,8...5,0
Del.quantity cm3/: 1,2...1,8
100H.: (0,9...2,1)
Calibrating-oil inlet temp. °C
                    : 38...42
                                                                      cm3/:0.8
                                                       Dispersion
Overflow valve
                                                                      100H.: (1,2)
                     : 1 417 413 025
                                                        (B) Setting of injection pump with
                                                            externally-mounted governor
Inlet press., bar : 1.50
                                                       SLEEVE TRAVELS
Calibrating nozzle-holder
                                                       1st speed 1/min: 300
Sleeve travel mm: 1,50...1,70
                   : 1 688 901 019
 assembly
                                                                   1/min: 850
Opening
                                                       2nd speed
                                                       Sleeve travel mm: 5,70...6,00
3rd speed 1/min: 1100
                    : 207...210
 pressure, bar
                                                         Sleeve travel mm: 8,00...8,20
Perforated-plate
 diameter mm
                    : 0,8
                                                       SLEEVE POSITION
                                                       Control-lever position
                                                                     Degree: -1
Test inj. tubing : 1 680 750 067
                                                                      17min: 1130
                                                       Speed
Outside diameter
                                                       Cont.-rod travelmm: 15,20...17,80
x Wall thickness
                                                       FULL-LOAD DELIV. AT FULL-LOAD STOP
x Length mm
                    : 6,00x1,50x1000
(A) Injection pump setting values
                                                       1st version
    Insp. values in parentheses
                                                       Speed
                                                                      1/min: 750
                                                       Charge press. hPa : 1000
    Set constant delivery quant.
                                                       Del.quantity cm3/: 183.0...185.0
1000H:: (180.0...188.0)
Dispersion cm3/: 5.0
    per values ____
START OF DELIVERY
                                                                     1000H.: (9.0)
Test pressure, bar: 30...32
J04
```

```
HIGHEST RATED SPEED
1st version
Control-lever
 position degrees: 62...70
Testing:
1st c-rod trav.mm : 8,70
Speed 1/min : 1140...1150
2nd c-rod trav.mm : 4,00
            1/min : 1205...1235
  Speed
4th speed
             1/min : 1350
  C-rod trav.mm
                    : 0,00...1,00
LOWEST RATED SPEED I
Control-lever
 position degrees: 7...15
Testing:
             1/min : 100
Speed
C-rod trav.mm min : 6,40
             1/min : 300
Speed
                    : 4,80...5,00
C-rod trav.mm
             nm : 2.00
1/min : 375...435
C-rod trav.mm
Speed
TORQUE CONTROL
Torque-control curve - 1st version
1st speed 1/min: 750
C-rod to:
                    : 10,30...10,40
  C-rod trav.mm
2nd speed 1/min : 1100
            v.mm : 9,70...9,80
1/min : 850
  C-rod trav.mm
3rd speed
  C-rod trav.mm
                    : 10,20...10,30
            1/min : 925
4th speed
                    : 9,90...10,10
  C-rod trav.mm
 compensator (LDA,ADA,ALDA)
1st version
Setting
             1/min : 500
Speed
Pressure
             hPa : 1000
Contr.-rod trav.mm: 10,30...10,40
Measurement
             1/min : 500
Speed
1st pressure hPa
                   : 8,90...9,10
: 85
  C-rod trav.mm
2nd pressure hPa
  C-rod trav.mm
                   : 9,30...9,40
                  : 160
3rd pressure hPa
  C-rod trav.mm
                   : 9,80...10,20
SWITCH-OVER POINT
             1/min : 220 (240)
Speed
```

J05

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FUEL-DELIVERY CHARACTERISTICS
```

1st version Charge press. hPa : 1000 1/min : 1100 Speed Del.quantity cm3/: 178.0...182.0 1000H.: (175.0...185.0) Charge press. hPa: 1000 1/min : 650 Speed Del.quantity cm3/: 174,0...180,0 1000H.: (171,0...183,0) Charge press. hPa : 160 1/min : 500 Speed Del.quantity cm3/: 157.0...169.0 1000H.: (154,0...172,0) Charge press. hPa : -1/min : 500 Speed Del.quantity cm3/: 132,0...134,0 1000H.: (129,9...137,0) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 8,70

STARTING FUEL DELIVERY

Speed 1/min: 100 Del.quantity cm3/: 225,0...245,0 1000H.: (221,0...249,0)

1/min : 1140...1150

LOW IDLE

Speed

Speed 1/min: 300 Contr.-rod trav.mm: 4,80...5,00 Del.quantity cm3/: 12,0...18,0 1000H.: (9,0...21,0) Dispersion cm3/: 8,0 1000H.: (12,0)

Remarks:

: MAN-NR. 2-7761

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet Edition Superceeded : MAN 11.9A24 : 31.07.87

: 9.86 Calibrating oil : ISO-4113

: 0 402 036 062 Combination no.

Injection pump

: PES6P120A720/3LS470-Pump designation

EP type number : 0 412 026 050

Governor

Governor design. : RQ300/1100PA813 Governer no. : 0 421 801 358

Customer \* spec. information Cus tomer

Engine : D2866LF

1st version kW : 243.0 1/min: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Calibrating nozzle-holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Perforated-plate

diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values \_\_\_\_

START OF DELIVERY

Test pressure, bar: 30...32

Speed 1/min : 1180...1210 4th speed 1/min: 1300 Prestroke mm : 2.80...2.90 : (2.75...2.95) C-rod trav.mm : 0.00...1.00 Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 6- 2- 4- 1- 5- 3 LOWEST RATED SPEED I Setting point w/out aux. spring 1/min : 300 Speed Contr.-rod trav.mm: 4.8 SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) Testing: 1/min : 100 Speed SD mark cyl. no. : 6 C-rod trav.mm min: 6.30 1/min : 300 Speed C-rod trav.mm : 4.80 BASIC SETTING mm : 2.00 1/min : 340...380 C-rod trav.mm 1/mi: 750 1st speed Speed Contr.-rod trav.mm: 11.30...11.40 TORQUE CONTROL Dimension a mm : 0.50 Del.quantity cm3/: 20.7...20.9 Torque-control curve - 1st version 1st speed 1/min : 750 : 12.00...12.30 100H.: (20.4...21.2) C-rod trav.mm 2nd speed 1/min : 1100 C-rod trav.mm : 10.70...10.80 Dispersion cm3/:0.53rd speed 1/min: 900 100H.: (0.9) C-rod trav.mm : 11.70...11.90 4th speed 1/min: 975 2nd speed 1/min: 300.0 Contr.-rod trav. m: 4.7...4.9 Del.quantity cm3/: 1.2...1.8 100H.: (0.9...2.1) Dispersion cm3/: 0.8 C-rod trav.mm : 11.00...11.30 compensator (LDA, ADA, ALDA) 100H.: (1.2) 1st version Setting SLEEVE POSITION 1/min : 500 Speed Control-lever position Pressure hPa : 1000 Degree: 45...47 Contr.-rod trav.mm: 11.30...11.40 Speed 17min: 600 Cont.-rod travelmm: 19.20...20.80 Measurement Speed 1/min : 500 FULL-LOAD DELIV, AT FULL-LOAD STOP 1st pressure hPa : -: 8.90...9.10 C-rod trav.mm 1st version 2nd pressure hPa : 85 Speed 1/min: 750 Charge press. hPa: 1000 Del.quantity cm3/: 207.0...209.0 C-rod trav.mm : 9.30...9.40 3rd pressure hPa : 280 1000H.: (204.0...212.0) cm3/ : 5.00 : 10.50...10.90 C-rod trav.mm Dispersion 1000H.: (9.00) SWITCH-OVER POINT Speed HIGHEST RATED SPEED 1/min : 190 (210) FUEL-DELIVERY CHARACTERISTICS Setting point: Speed 1/min: 600 Contra-rod trav.mm: 20.0 1st version Charge press. hPa : 1000 Testing: 1st c-rod trav.mm : 9.70 Speed 1/min: 1100 Speed 1/min: 1145...1160 2nd c-rod trav.mm: 4.00 Del.quantity cm3/: 203.0...207.0 1000H.: (200.0...210.0) J07

```
Charge press. hPa : 1008
Speed 1/min : 650
Del.quantity cm3/: 206.0...212.0
1000H.: (203.0...215.0)
Charge press. hPa: 280
Speed
                1/min : 500
Del.quantity cm3/: 184.0...196.0
1000H.: (181.0...199.0)
Charge press. hPa : -
Speed 1/min : 5
Speed 1/min: 500
Del.quantity cm3/: 132.0...134.0
1000H.: (129.0...137.0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 9.70
                1/min: 1145...1160
Speed
STARTING FUEL DELIVERY
                1/min : 100
Speed
Del.quantity cm3/: 225.0...245.0
1000H.: (221.0...249.0)
LOW IDLE
                1/min : 300
Speed
Contr.-rod trav.mm: 4.70...4.90
Del.quantity cm3/: 12.0...18.0
                1000H.: (9.0...21.0)
                cm3/: 8.00
1000H:: (12.00)
Dispersion
Remarks:
```

Note inst. in remarks column

Test sheet : MAN 11,9 G6
Edition : 18.8.87
Superceeded : 9.86
Calibrating oil : ISO-4113

Combination no. : 0 402 036 064

Injection pump

: PES6P110A720/3 Pump designation

LS477-2

EP type number : 0 412 016 071

Governor

Governor design. : RQ250/1100PA817-1 Governer no. : 0 421 801 362

Customer-spec. information Customer

: D2866UH/200 Engine

1st version kW : 150.0 1/min: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Calibrating nozzle-holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter x Wall thickness

: 6,00x1,50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant.

per values

START OF DELIVERY

Test pressure, bar: 25...27

: 3,50...3,60 : (3,45...3,65) Prestroke mm

SD mark cyl. no. : 6   Speed	Contrrod trav.mm: 9,0012,00 Cam sequence : 6-2-4-1-5-3 SD eng. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0,50 (0,75)	LOWEST RATED SPEED I Control-lever position degrees: 816 Setting point w/out aux. spring Speed 1/min: 250 Contrrod trav.mm: 6,20
Spead	Toterance + -	Testing:
Speed 1/min 250   Speed 1/mi	SD mark cyl. no. : 6	Speed 1/min: 100
St speed	BASIC SETTING	Speed 1/min : 250 C-rod trav.mm : 6.20
Contrrod trav.mm: 10,5010,60  Del.quantity cm3/: 9,19,4  Torque-control curve - 1st version 1st speed 1/min: 1100  C-rod trav.mm: 10,5010,60  2nd speed 1/min: 500  C-rod trav.mm: 10,5010,70  100H.: (0,7)  SWITCH-OVER POINT  2nd speed 1/min: 250,0  Contrrod trav.m: 6,16,3  Del.quantity cm3/: 1,52,0  Speed 1/min: 1100  Del.quantity cm3/: 1,52,0  Speed 1/min: 1100  Del.quantity cm3/: 1,52,0  Speed 1/min: 1100  SLEEVE POSITION  Control-lever position  Degree: 4547  Speed 1/min: 600  Controd travelmm: 19,2020,80  FULL-LOAD DELIV. AT FULL-LOAD STOP  Dispersion cm3/: 4,0  1000H.: (7,5)  HIGHEST RATED SPEED  Speed 1/min: 100  Speed 1/min: 100  LOW IDLE  Speed 1/min: 100  Contrrod travelmm: 20,0  Speed 1/min: 100  Speed 1/min: 100  Speed 1/min: 100  STARTING FUEL DELIVERY  LOW IDLE  Contrrod trav.mm: 250,0  Speed 1/min: 100  Speed 1/min: 100  Del.quantity cm3/: 110.0130.0  Speed 1/min: 100  Del.quantity cm3/: 110.0130.0  Speed 1/min: 100  Del.quantity cm3/: 110.0130.0  Speed 1/min: 250  Speed 1/min: 100  Del.quantity cm3/: 110.0134.0  Speed 1/min: 600  Contrrod trav.mm: 20,0	1st speed 1/mi: 800	C-rod trav.mm : 2,00
Del. quantity cm3/ : 9,19,4  100H: (8,89,6)  100H: (8,89,6)  100H: (0,7)  100H: (0,7)  2nd speed 1/min: 500  C-rod trav.mm : 10,5010,70  100H: (0,7)  2nd speed 1/min: 170 (190)  Contrrod trav. m: 6,16,3  Del. quantity cm3/ : 1,52,0  100H: (1,22,2)  Dispersion cm3/: 0,4  100H: (0,7)  SLEEVE POSITION  Control-lever position  Degree: 4547  Speed 1/min: 500  Control-lever position  Degree: 4547  Speed 1/min: 600  Control-rod travelmm: 19,2020,80  FULL-LOAD DELIV. AT FULL-LOAD STOP  Del. quantity cm3/ : 77,085,0  1000H: (74,088,0)  Speed 1/min: 800  Speed 1/min: 800  Speed 1/min: 800  Speed 1/min: 500  Speed 1/min: 11451160  Speed 1/min: 100  Del. quantity cm3/ : 91,094,0  1000H: (75)  FULL-ROAD DELIVERY  Dispersion cm3/ : 4,0  1000H: (75)  HIGHEST RATED SPEED  Speed 1/min: 100  Del. quantity cm3/ : 110.0130.0  Setting point: Speed 1/min: 600  Contrrod trav.mm: 20,0  Speed 1/min: 250	Contrrod trav.mm: 10,5010,60	·
100H.: (8,89,6)	Del.quantity cm3/ : 9,19,4	Torque-control curve - 1st version
Dispersion cm3/: 0,4  100H.: (0,7)  2nd speed 1/min: 250,0 Contrrod trav. m: 6,16,3 Del.quantity cm3/: 1,52,0 Dispersion cm3/: 0,4  100H.: (0,7)  Dispersion cm3/: 0,4  100H.: (1,22,2) Dispersion cm3/: 0,4  100H.: (0,7)  SLEEVE POSITION Control-lever position Degree: 4547 Speed 1/min: 500 Controd travelmm: 19,2020,80  FULL-LOAD DELIV. AT FULL-LOAD STOP Del.quantity cm3/: 77,085,0  Speed 1/min: 800 Controd travelmm: 19,2020,80  FULL-LOAD DELIV. AT FULL-LOAD STOP Del.quantity cm3/: 91,094,0 1000H.: (88,596,5) Dispersion cm3/: 4,0 1000H.: (88,596,5) Dispersion cm3/: 4,0 Speed 1/min: 100 Del.quantity cm3/: 110.0130.0 Del.quantity cm3/: 110.0130.0 Setting point: Speed 1/min: 600 Contrrod trav.mm: 20,0  Speed 1/min: 250  Speed 1/min: 100 Del.quantity cm3/: 110.0134.0	100H.: (8,89,6)	C-rod trav.mm : 10,5010,60
Speed   1/min   250,0   Speed   1/min   170 (190)	Dispersion cm3/: 0,4	C-rod trav.mm : 10,5010,70
Contrrod trav. m: 6,16,3 Del.quantity cm3/: 1,52,0 Dispersion cm3/: 0,4 Dispersion cm3/: 0,4 Del.quantity cm3/: 101,0109,0 Dispersion cm3/: 0,4 Del.quantity cm3/: 101,0109,0 Del.quantity cm3/: 101,0109,0 Del.quantity cm3/: 77,085,0 Del.quantity cm3/: 77,085,0 Del.quantity cm3/: 77,085,0 Del.quantity cm3/: 77,085,0 Del.quantity cm3/: 77,088,0) Del.quantity cm3/: 79,094,0 Del.quantity cm3/: 91,094,0 Del.quantity cm3/: 91,094,0 Del.quantity cm3/: 91,094,0 Dispersion cm3/: 4,0 Del.quantity cm3/: 11451160 Del.quantity cm3/: 1000H.: (7.5) Dispersion cm3/: 4,0 Del.quantity cm3/: 110,0130.0 Setting point: Speed 1/min: 600 Contrrod trav.mm: 20,0  Speed 1/min: 250  LOW IDLE Speed 1/min: 250	100H.: (0,7)	SWITCH-OVER POINT
Del.quantity cm3/: 1,52,0	2nd speed 1/min: 250,0	Speed 1/min : 170 (190)
100H.: (1,22,2)   Speed	Del.quantity cm3/: 1,52,0	
100H.: (0,7)  SLEEVE POSITION Control-lever position Degree: 4547  Speed 1/min: 600 Controd travelmm: 19,2020,80  1st version Speed 1/min: 800 Pel.quantity cm3/: 91,094,0 1000H.: (88,596,5) Pispersion cm3/: 4,0 1000H.: (7.5)  HIGHEST RATED SPEED  1000H.: (600 Contrrod trav.mm: 20,0  Speed 1/min: 600 Speed 1/min: 600 Setting point: Speed 1/min: 600 Contrrod trav.mm: 250 Speed 1/min: 100 Del.quantity cm3/: 110.0130.0 Setting point: Speed 1/min: 600 Control-lever position Del.quantity cm3/: 110.0130.0 Speed 1/min: 100 Del.quantity cm3/: 110.0130.0 Setting point: Speed 1/min: 250 Speed 1/min: 250	100H.: (1,22,2)	Speed 1/min: 1100
SLEEVE POSITION	100H.: (0,7)	1000H.: (98.0112,0)
Control-lever position	CLEEVE DOCTTION	Speed 1/min: 500
Speed 1/min: 600 Controd travelmm: 19,2020,80  FULL-LOAD DELIV. AT FULL-LOAD STOP  1st version Speed 1/min: 800 Speed 1/min: 800 Del.quantity cm3/: 91,094,0 1000H.: (88,596,5) Dispersion cm3/: 4,0 1000H.: (7.5)  HIGHEST RATED SPEED  Speed 1/min: 100 Bel.quantity cm3/: 110,0130,0 Setting point: Speed 1/min: 600 Contrrod trav.mm: 20,0  Speed 1/min: 250	Control-lever position i	1000H.: (74,088,0)
Controd travelmm: 19,2020,80  FULL-LOAD DELIV. AT FULL-LOAD STOP  1st version 1st ver	Degree: 4547	ROTATIONAL-SPEED LIMITATION
FULL-LOAD DELIV. AT FULL-LOAD STOP  1st version Speed 1/min: 800 Del.quantity cm3/: 91,094,0 1000H.: (88,596,5) Dispersion cm3/: 4,0 1000H.: (7.5)  HIGHEST RATED SPEED  Setting point: Speed 1/min: 600 Contrrod trav.mm: 20,0  Speed 1/min: 250  Speed 1/min: 250	Controd travelmm: 19,2020,80	
Speed       1/min: 800         Det.quantity cm3/: 91,094,0         Speed       1/min: 11451160         1000H.: (88,596,5)         STARTING FUEL DELIVERY         Dispersion cm3/: 4.0         Speed       1/min: 100         HIGHEST RATED SPEED         Speed       1/min: 100         Setting point:         Det.quantity cm3/: 110.0130.0         Speed       1/min: 600         Contrrod trav.mm: 20,0         Speed       1/min: 250	FULL-LOAD DELIV. AT FULL-LOAD STOP	
Del.quantity cm3/: 91.094.0 1000H.: (88.596.5)  Dispersion cm3/: 4.0 1000H.: (7.5)  HIGHEST RATED SPEED  Setting point: Speed 1/min: 600 Setting point: Speed 1/min: 600 LOW IDLE Contrrod trav.mm: 20.0  Speed 1/min: 250		
1000H.: (88,596,5)  Dispersion cm3/ : 4.0 1000H.: (7.5)  HIGHEST RATED SPEED  Setting point: Speed 1/min : 600  Setting point: Speed 1/min : 600  LOW IDLE  Contrrod trav.mm: 20,0  Speed 1/min : 250	Speed 1/min: 800     Del. quantity cm3/: 91.094.0	Speed 1/min: 11451160
1000H.: (7.5)  HIGHEST RATED SPEED  Setting point: Speed  1/min: 600  LOW IDLE  Contrrod trav.mm: 20,0  Speed  1/min: 250	1000H.: (88,596,5)	STARTING FUEL DELIVERY
HIGHEST RATED SPEED    Speed 1/min: 100	1000H.: (7.5)	
Setting point: 1000H.: (106.0134.0   1000H	1	
Speed 1/min: 600   LOW IDLE   Contrrod trav.mm: 20,0     Speed 1/min: 250		1000H.: (106.0134.0)
Contrrod trav.mm: 20,0	Setting point:	LOW IDLE
lesting:	Testing:	Contrrod trav.mm: 6,106,30
1st c-rod trav.mm: 9,50   Del.quantity cm3/: 15,020,0	1st c-rod trav.mm: 9,50	Del.ouantity cm3/ : 15.020.0
2nd c-rod trav.mm: 4,00 I Dispersion cm3/: 4,5	2nd c-rod trav.mm : 4,00	Dispersion cm3/: 4,5
Speed 1/min: 12151245   1000H.: (7.5) 4th speed 1/min: 1300		1000H.: (7.5)
C-rod trav.mm : 0,001,00   Remarks:   APPLICATION	C-rod trav.mm : 0,001,00	

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Contr.-rod trav.mm: 9.00...12.00
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                         Cam sequence : 6- 2- 4- 1- 5- 3
Note inst. in remarks column
                     : MAN 11.9 B1
: 18.8.87
Test sheet
                                                         SD ang. spacing ^{\circ} CS: 0-60-120-180-240-300 Tolerance + - ^{\circ} : 0.50 (0.75)
Edition
Superceeded
Calibrating oil : ISO-4113
                                                         SD mark cyl. no. : 6
                    : 0 402 036 065
Combination no.
                                                         BASIC SETTING
Injection pump
Pump designation : PES6P110A720/3
                                                                         1/mi: 800
                                                         1st speed
                      LS477-2
                                                         Contr.-rod trav.mm: 11.70...11.80
                     : 0 412 016 071
EP type number
Governor
                                                         Del.quantity cm3/: 12.3...12.6
Governor design. : RQV300...1100PA831
                    : 0 421 813 574
Governer no.
                                                                        100H.: (12.0...12.8)
Customer-spec. information
                                                         Dispersion
                                                                        cm3/:0.4
Customer
                    : MAN
                     : D2866 F
                                                                        100H.: (0.7)
Engine
                                                         2nd speed 1/min: 300.0
Contr.-rod trav. m: 5.9...6.1
Del.quantity cm3/: 1.5...2.0
1st version kW : 177.0
               1/min: 2200
Speed
                                                                        100H.: (1.2...2.2)
TEST BENCH REQUIREMENTS
                                                                        cm3/: 0.4
100H.: (0.7)
                                                         Dispersion
Calibrating-oil inlet temp. °C
                     : 38...42
                                                         (B) Setting of injection pump with externally-mounted governor
Overflow valve
                     : 1 417 413 025
                                                         SLEEVE TRAVELS
                                                         1st speed 1/min: 250
Inlet press., bar: 1.50
                                                           Sleeve travel mm: 1.10...1.30
                                                         2nd speed 1/min: 450
Steeve travel mm: 3.00...3.40
3rd speed 1/min: 900
Calibrating nozzle-holder
            : 0 681 343 009
 assembly
                                                           Sleeve travel mm: 6.00...6.30
Opening
 pressure, bar : 172...175
                                                         4th speed 1/min: 1100
                                                           Sleeve travel mm: 7.70...7.90
Test inj. tubing : 1 680 750 015
                                                         SLEEVE POSITION
                                                         Control-lever position
                                                                      Degree: -1
1/min: 1170
Outside diameter
x Wall thickness
                                                         Cont.-rod travelmm: 15.20...17.80
                     : 6.00x1.50x600
x Length mm
                                                         FULL-LOAD DELIV. AT FULL-LOAD STOP
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                         1st version
                                                                        1/min: 800
    per values
                                                         Speed
                                                        Del.quantity cm3/: 123.0...126.0
1000H.: (120.5...128.5)
Dispersion cm3/: 4.0
1000H.: (7.5)
START OF DELIVERY
Test pressure, bar: 25...27
                  : 3.50...3.60
Prestroke mm
                     : (3.45...3.65)
                                                        HIGHEST RATED SPEED
J12
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1st version
Control-lever
 position degrees: 49...57
Testing:
1st c-rod trav.mm : 10.70
            1/min: 1140...1150
  Speed
2nd c-rod trav.mm : 4.00
            1/min: 1230...1260
  Speed
4th speed
            1/min : 1350
  C-rod trav.mm : 0.00...1.00
LOWEST RATED SPEED I
Control-lever
 position degrees: 16...24
Testing:
Speed
            1/min : 100
C-rod trav.mm min : 7.50
           1/min : 300
Speed
                   : 5.90...6.10
C-rod trav.mm
CONSTANT REGULATION
            1/min : 300...395
Speed
SWITCH-OVER POINT
Speed
            1/min : 220 (240)
FUEL-DELIVERY CHARACTERISTICS
Speed
            1/min : 1100
Del.quantity cm3/: 127.0...133.0
            1000H.: (124.0...136.0)
             1/min : 500
Speed
Del.quantity cm3/: 115.0...121.0
            1000H.: (112.0...124.0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 10.70
            1/min : 1140...1150
Speed
STARTING FUEL DELIVERY
Speed
            1/min : 100
Del, quantity cm3/: 110.0...130.0
            1000H.: (106.0...134.0)
LOW IDLE
Speed     1/min : 300
Contr.-rod trav.mm: 5.90...6.10
Del.quantity cm3/: 15.0...20.0
            1000H.: (12.5...22.5)
            cm3/: 4.5
1000H.: (7.5)
Dispersion
```

Remarks: : MAN-NR. 2-7723

J13

Note inst. in remarks column

Test sheet : MAN 11,9 67 Edition : 18.8.87 Superceeded : -

Calibrating oil : ISO-4113

Combination no. : 0 402 036 066

Injection pump

Pump designation : PES6P110A720/3

LS477-2

EP type number : 0 412 016 071

Governor

Governor design. : RQ250/1100PA845 : 0 421 801 380 Governer no.

Customer-spec. information Customer : MAN

: D2866 F Engine

1st version kW : 177.0 Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Calibrating nozzle-holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant.

per values \_\_\_\_

START OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Contr.-rod trav.mm: 9.00...12.00 LOWEST RATED SPEED I Cam sequence : 6-2-4-1-5-3 Control-lever position degrees: 8...16 Setting point w/out aux. spring 1/min : 300 Speed SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - 0.50 (0.75) Contr.-rod trav.mm: 6.0 Testing: Speed 1/min: 100 C-rod trav.mm min: 7.50 SD mark cyl. no. : 6 BASIC SETTING Speed 1/min : 300 C-rod trav.mm : 6.00 C-rod trav.mm : 2.00 1/mi: 800 1st speed Speed 1/min: 320...360 Contr.-rod trav.mm: 11.70...11.80 TORQUE CONTROL Torque-control curve - 1st version Del.quantity cm3/: 12.3...12.6 1/min : 850 1st speed 100H.: (12.0...12.8) C-rod trav.mm : 12.20...12.30 2nd speed 1/min : 1100 C-rod trav.mm : 12.10...12.30 Dispersion cm3/:0.4SWITCH-OVER POINT 100H.: (0.7) 1/min: 250.0 1/min : 170 (190) 2nd speed Speed Contr.-rod trav. m: 5,90...6,10 Del.quantity cm3/: 1.5...2.0 100H.: (1.2...2.2) Dispersion cm3/: 0.4 100H.: (0.7) FUEL-DELIVERY CHARACTERISTICS 1/min : 1100 Speed Del.quantity cm3/: 127.0...133.0 1000H.: (124.0...136.0) Speed 1/min: 500 Del.quantity cm3/: 115.0...121.0 1000H.: (112.0...124.0) SLEEVE POSITION Control-lever position Degree: 45...47 ROTATIONAL-SPEED LIMITATION 17min: 600 Cont.-rod travelmm: 19.20...20.80 1st version 1mm control-rod travel less than FULL-LOAD DELIV. AT FULL-LOAD STOP full-load trav.mm: 10.70 1st version Speed 1/min: 1145...1160 1/min: 800 Speed Del.quantity cm3/: 123.0...126.0 1009H.: (120.5...128.5) Dispersion cm3/: 4.0 1000H.: (7.5) STARTING FUEL DELIVERY 1/min : 100 Del.quantity cm3/: 110.0...130.0 1000H.: (106.0...134.0) HIGHEST RATED SPEED Setting point: LOW IDLE 1/min : 600 Speed Contr.-rod trav.mm: 20.0 Speed 1/min: 250 Contr.-rod trav.mm: 5,90...6,10 Del.quantity cm3/: 15.0...20.0 1000H.: (12.5...22.5) Dispersion cm3/: 4.5 Testing: 1st c-rod trav.mm: 10.70 Speed 1/min: 1145...1160 2nd c-rod trav.mm : 4.00 Speed 1/min: 1220...1250 1000H .: (7.5) 1/min : 1350 4th speed C-rod tray,mm : 115.0...123.0 Remarks: : MAN-NR. 2-7821

Note inst. in remarks column

Test sheet Edition : MAN 11.9 B2 : 18.8.87

Superceeded Calibrating oil : ISO-4113

: 0 402 036 067 Combination no.

Injection pump

Pump designation : PES6P110A720/3 LS477-2

: 0 412 016 071 EP type number

Governor

Governor design. : RQV300...1100PA846 Governer no. : 0 421 813 593

Customer-spec. information Customer

: D 2866 F Engine

1st version kW : 177.0 1/min: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Calibrating nozzle-holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter

x Wall thickness : 6,00X1,50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values

START OF DELIVERY

Test pressure, bar: 30...32

: 3,50...3,60 : (3,45...3,65) Prestroke mm

Contr.-rod trav.mm: 9,00...12,00 1st version Cam sequence : 6-2-4-1-5-3 Control-lever position degrees: 48...56 Testing: SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0,50 (0.75) 1st c-rod trav.mm : 10,70 Speed 1/min : 1140...1150 2nd c-rod trav.mm: 4,00 1/min: 1240...1270 SD mark cyl. no. : 6 4th speed 1/min : 1350 BASIC SETTING C-rod trav.mm : 0,00...1,00 LOWEST RATED SPEED I 1st speed 1/mi: 800 Control-lever Contr.-rod trav.mm: 11,70...11,80 position degrees: 15...23 Del.quantity cm3/ : 12,3...12,6 Testing: 1/min : 100 Speed C-rod trav.mm min : 7,50 100H.: (12,0...12,8) 1/min : 300 C-rod trav.mm Dispersion cm3/: 0.40: 5,90...6,10 100H.: 0,75 CONSTANT REGULATION 1/min : 305...460 Speed 2nd speed 1/min: 300 Contr.-rod trav. m: 5,90...6,10 Del.quantity cm3/: 1,5...2,0 SWITCH-OVER POINT 100H.: (1.2...2,2) cm3/: 0.45 100H.: (0.75) 1/min : 220 (240) Speed Dispersion FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 1100
Del.quantity cm3/: 127.0...133.0
1000H.: (124,0...136,0) (B) Setting of injection pump with externally-mounted governor 1/min : 500 Speed Del.quantity cm3/: 115,0...121,0 SLEEVE TRAVELS 1st speed 1/min: 250 1000H.: (112,0...124,0 Sleeve travel mm: 1,10...1,30 2nd speed 1/min: 450
Sleeve travel mm: 2,90...3,30
3rd speed 1/min: 900
Sleeve travel mm: 5,80...6,20
4th speed 1/min: 1100 ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than Sleeve travel mm: 7,50...7.70 full-load trav.mm: 10,70 1/min : 1140...1150 SLEEVE POSITION STARTING FUEL DELIVERY Control-lever position Degree: -1 Speed 1/min: 1170 Cont.-rod travelmm: 15,20...17,80 Speed 1/min : 100 Del.quantity cm3/: 110,0...130,0 FULL-LOAD DELIV. AT FULL-LOAD STOP 1000H.: (106,0...134,0) 1st version LOW IDLE 1/min: 800 Speed Del.quantity cm3/: 123,0...126,0 1000H:: (120,5...128,5) Dispersion cm3/: 4.0 1000H:: (7,5) Speed 1/min: 300 Contr.-rod trav.mm: 5,90...6,10 Del.quantity cm3/: 15,0...20,0 1000H:: (12,5...22,5) cm3/: 4.5 1000H.: (7,5) Dispersion HIGHEST RATED SPEED

J18

Remarks: : MAN-NR. 2-7822 J19

Note inst. in remarks column

Test sheet Edition Superceeded : MAN 11,9A27 : 09.03.87

Calibrating oil : ISO-4113

: 0 402 036 068 Combination no.

Injection pump

Governor design.

Pump designation : PES6P120A720/3LS470-

: 0 412 026 050 EP type number

Governor

: RQ300/1100PA658-22

Governer no. : 0 421 801 389

Customer-spec. information Customer

: D2866TOH Engine

1st version kW : 213.0 Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Perforated-plate

diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values

START OF DELIVERY

Test pressure, bar: 30...32

1/min : 1180...1210 1/min : 1300 Speed 4th speed Prestroke mm : 2.80...2.90 : (2.75...2.95) C-rod trav.mm : 0.00...1.00 Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 6- 2- 4- 1- 5- 3 LOWEST RATED SPEED I Control-lever position degrees: 7...15 Setting point w/out aux. spring SD ang. spacing  $^{\circ}$  CS: 0-60-120-180-240-300 Tolerance + -  $^{\circ}$  : 0.50 (0.75) Speed 1/min: 300 Contr.-rod trav.mm: 4.8 SD mark cyl. no. : 6 Testing: Speed 1/min : 100 BASIC SETTING C-rod trav.mm min: 6.30 Speed 1/min: 300 C-rod trav.mm : 4.80 1st speed 1/mi: 750 mm : 2.00 1/min : 340...380 C-rod trav.mm Contr.-rod trav.mm: 10.60...10.70 Speed Del.quantity cm3/: 19.1...19.3 TORQUE CONTROL Dimension a mm : 0.30 100H.: (18.8...19.6) Torque-control curve - 1st version 1st speed 1/min: 750 C-rod trav.mm : 11.10...11.20 2nd speed 1/min : 1100 Dispersion cm3/:0.5C-rod trav.mm : 10.30...10.40 3rd speed 1/min : 980 100H.: (0.9) 1/min: 300.0 2nd speed C-rod trav.mm : 10.80...11.00 4th speed 1/min : 1025 Contr.-rod trav. m: 4.7...4.9 Del.quantity cm3/ : 1.2...1.8 C-rod trav.mm : 10.40...10.70 100H.: (0.9...2.1) cm3/: 0.8 100H.: (1.2) Dispersion compensator (LDA,ADA,ALDA) SLEEVE POSITION 1st version Control-lever position Setting Degree: 45...47 1/min : 500 Speed Pressure Speed 17min: 650 hPa : 1000 Cont.-rod travelmm: 19.20...20.80 Contr.-rod trav.mm: 10.30...10.40 FULL-LOAD DELIV. AT FULL-LOAD STOP Measurement 1/min : 500 Speed 1st version Speed 1/min: 750 1st pressure hPa : -Charge press. hPa: 1000
Del.quantity cm3/: 191.0...193.0
1000H.: (188.0...196.0)
Dispersion cm3/: 5.00 C-rod trav.mm : 8.80...8.90 2nd pressure hPa : 240 3rd pressure hPa : 520 C-rod tray m 1000H.: (9.00) C-rod trav.mm : 10.00...10.40 SWITCH-OVER POINT HIGHEST RATED SPEED 1/min : 220 (240) Setting point: Speed 1/min : 650 Speed FUEL-DELIVERY CHARACTERISTICS Contr.-rod trav.mm: 20.0 Testing: 1st c-rod trav.mm : 9.30 1st version Charge press. hPa : 1000 Speed 1/min: 1145...1160 2nd c-rod trav.mm : 4.00 1/min : 1100 Speed

```
Del.quantity cm3/: 193.0...197.0
1000H.: (190.0...200.0)
Charge press. hPa : 1000
              1/\min : 650
Speed
Del.quantity cm3/: 184.0...190.0
              1000H.: (181.0...193.0)
Charge press. hPa: 520
Speed
              1/min : 500
Del.quantity cm3/: 168.0...180.0
1000H.: (165.0...183.0)
Charge press. hPa : -
              1/min : 500
Speed
Del.quantity cm3/: 128.0...130.0
              1000H.: (125.0...133.0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 9.30
Speed
              1/min : 1145...1160
STARTING FUEL DELIVERY
Speed
              1/min : 100
Del.quantity cm3/ : 225.0...245.0
              1000H.: (221.0...249.0)
LOW IDLE
              1/min : 300
Speed
Contr.-rod trav.mm: 4.70...4.90
Del.quantity cm3/: 12.0...18.0
1000H.: (9.0...21.0)
              cm3/: 8.00
1000H.: (12.00)
Dispersion
Remarks:
                     : MAN-NR. 2-7820
APPLICATION
Omn ibus
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BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                         : 2.80...2.90
                                                     Prestroke mm
Note inst. in remarks column
                                                                         : (2.75...2.95)
                                                     Contr.-rod trav.mm: 9.00...12.00
                   : MAN 11,9A28
: 31.07.87
                                                                         : 6-2-4-1-5-3
Test sheet
                                                     Cam sequence
Edition
Superceeded
Calibrating oil
                   : ISO-4113
                                                     SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Combination no.
                   : 0 402 036 069
Injection pump
                                                     SD mark cyl. no. : 6
                   : PES6P120A720/3LS470-
Pump designation
                                                     BASIC SETTING
EP type number
                    : 0 412 026 051
Governor
                                                     1st speed
                                                                    1/mi: 750
Governor design. : RQ300/1100PA679-2
Governor no. : 0 421 801 402
                                                     Contr.-rod trav.mm: 10.60...10.70
Customer-spec. information
                                                     Del.quantity cm3/ : 18.3...18.5
Customer
                                                                   100H.: (18.0...18.8)
Engine
                   : D2866KUL
                                                                   cm3/:0.5
                                                     Dispersion
1st version kW : 213.0
              1/min: 2200
Speed
                                                                   100H.: (0.9)
                                                     2nd speed 1/min: 300.0
Contr.-rod trav. m: 5.0...5.2
Del.quantity cm3/: 1.2...1.8
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                                                                   100H.: (0.9...2.1) cm3/: 0.8
                   : 38...42
                                                     Dispersion
Overflow valve
                                                                   100H.: (1.2)
                    : 1 417 413 025
                                                     SLEEVE POSITION
                                                     Control-lever position
Inlet press., bar : 1.50
                                                                  Degree: 45...47
                                                                   17min: 600
Calibrating nozzle-holder
                                                     Speed
                   : 1 688 901 019
                                                     Cont.-rod travelmm: 19.20...20.80
 assembly
                                                     FULL-LOAD DELIV. AT FULL-LOAD STOP
Opening
 pressure, bar
                   : 207...210
                                                     1st version
                                                                   1/min: 750
Perforated-plate
                                                     Speed
                                                     diameter mm
                   : 0.8
Test inj. tubing : 1 680 750 067
Outside diameter
                                                     HIGHEST RATED SPEED
x Wall thickness
x Length mm
                  : 6.00x1.50x1000
                                                     Setting point:
                                                                1/min : 600
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                     Contra-rod trav.mm: 20.0
    per values ____
                                                     Testing:
                                                     1st c-rod trav.mm: 9.60
START OF DELIVERY
                                                       Speed
                                                                 1/min: 1145...1160
                                                     2nd c-rod trav.mm : 4.00
Test pressure, bar: 25...27
J23
```

1/min: 1180...1210 Speed 1/min: 1350 4th speed : 0.00...1.00 C-rod trav.mm LOWEST RATED SPEED I Control-lever position degrees: 6...14 Setting point w/out aux. spring 1/min : 300 Contr.-rod trav.mm: 5.1 Testing: 1/min : 100 Speed C-rod trav.mm min : 6.60 1/min : 300 Speed : 5.10 C-rod trav.mm nm : 2.00 1/min : 345...385 C-rod trav.mm Speed TORQUE CONTROL Dimension a mm : 0.20 Torque-control curve - 1st version 1/min : 1100 1st speed : 10.60...10.70 C-rod trav.mm 1/min : 750 2nd speed C-rod trav.mm : 11.20...11.40 3rd speed 1/min: 925 C-rod trav.mm : 10.70...11.00 compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 500 Speed hPa : 1000 Pressure Contr.-rod trav.mm: 10.60...10.70 Measurement Speed 1/min : 500 1st pressure hPa : 8.80...9.00 C-rod trav.mm 2nd pressure hPa : 210 : 9.10...9.20 : 375 C-rod trav.mm 3rd pressure hPa : 9.90...10.20 C-rod trav.mm SWITCH-OVER POINT Speed 1/min : 190 (210) FUEL-DELIVERY CHARACTERISTICS 1st version Charge press. hPa : 1000 1/min : 1100 Speed Del.quantity cm3/: 190.0...196.0 1000H.: (187.0...199.0)

Charge press. hPa : 1000 1/min : 650 Speed Del.quantity cm3/: 174.0...180.0 1000H.: (171.0...183.0) Charge press. hPa :

Speed 1/min : 500 Del.quantity cm3/: 119.0...121.0 1000H.: (116.0...124.0)

ROTATIONAL-SPEED LIMITATION

1st version 1mm control-rod travel less than

full-load trav.mm: 9.60 Speed 1/min : 1145...1160

STARTING FUEL DELIVERY

Speed 1/min : 100 Del.quantity cm3/: 225.0...245.0 1000H.: (221.0...249.0)

LOW IDLE

Speed 1/min : 300 Contr.-rod trav.mm: 5.00...5.20 Del.quantity cm3/: 12.0...18.0 1000H.: (9.0...21.0) Dispersion cm3/: 8.00 1000H.: (12.00)

Remarks:

Note inst. in remarks column

Test sheet : MAN 11,9A29 : 26.06.87 Edition

Superceeded

Calibrating oil : ISO-4113

: 0 402 036 070 Combination no.

Injection pump

Pump designation : PES6P120A720/3LS470-

EP type number : 0 412 026 051

Governor

Governor design. : RQV300...1100PA707-2

Governer no. : 0 421 813 638

Customer-spec. information Customer

: D2866LUL/290 Engine

1st version kW : 213.0 1/min: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. OC

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Calibrating nozzle-holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Perforated-plate

diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values \_\_\_\_\_

START OF DELIVERY

Test pressure, bar: 30...32

Dispersion cm3/ : 5.00 Prestroke mm : 2.80...2.90 1000H.: (9.00) : (2.75...2.95) Contr.-rod trav.mm: 9.00...12.00 HIGHEST RATED SPEED Cam sequence : 6- 2- 4- 1- 5- 3 1st version Control-lever position degrees: 48...56 SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) Testing: 1st c-rod trav.mm: 9.60 Speed 1/min: 1140...1150 2nd c-rod trav.mm : 4.00 SD mark cyl. no. : 6 Speed 1/min: 1225...1255 th speed 1/min: 1350 C-rod trav.mm: 0.00...1.00 BASIC SETTING 4th speed 1/mi: 750 1st speed LOWEST RATED SPEED I Contr.-rod trav.mm: 10.60...10.70 Control-lever position degrees: 15...23 Del.quantity cm3/: 18.3...18.5 Testing: 100H.: (18.0...18.8) 1/min : 100 Speed C-rod trav.mm min : 6.80 Speed 1/min : 300 Dispersion cm3/:0.5C-rod trav.mm : 5.20...5.40 100H.: (0.9) CONSTANT REGULATION 1/min : 310...410 1/min: 250.0 Speed 2nd speed Contr.-rod trav. m: 5.2...5.4

Del.quantity cm3/: 1.2...1.8

100H.: (0.9...2.1)

Dispersion cm3/: 0.8

100H.: (1.2) compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 500 (B) Setting of injection pump with Speed hPa : 1000 externally-mounted governor Pressure Contr.-rod trav.mm: 10.60...10.70 SLEEVE TRAVELS 1st speed 1/min: 300 Sleeve travel mm: 1.60...1.80 Measurement Speed 1/min : 500 2nd speed 1/min: 475
Sleeve travel mm: 3.10...3.50
3rd speed 1/min: 850 1st pressure hPa : -C-rod trav.mm : 8.80...8.90 Sleeve travel mm: 5.50...5.90
4th speed 1/min: 1100
Sleeve travel mm: 7.40...7.60 2nd pressure hPa : 210 C-rod trav.mm : 9.10...9.20 3rd pressure hPa : 375 C-rod trav.mm : 9.90...10.20 SLEEVE POSITION Control-lever position SWITCH-OVER POINT Degree: -1 1/min: 1175 Speed 1/min : 220 (240) Speed Cont.-rod travelmm: 15.20...17.80 FUEL-DELIVERY CHARACTERISTICS FULL-LOAD DELIV. AT FULL-LOAD STOP 1st version 1st version Speed Charge press. hPa : 1000 1/min: 750 Charge press. hPa : 1000 Del.quantity cm3/ : 183.0...185.0 Speed 1/min: 1100 Del.quantity cm3/: 192.0...198.0 1000H.: (189.0...201.0) 1000H.: (180.0...188.0) J26

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Charge press. hPa : 1000
Speed 1/min : 650
Speed 1/min: 650
Del.quantity cm3/: 172.0...178.0
1000H.: (169.0...181.0)
Charge press. hPa: -
Speed 1/min: 5
Speed 1/min: 500
Del.quantity cm3/: 119.0...121.0
1000H.: (116.0...124.0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 9.60
Speed
                1/min : 1140...1150
STARTING FUEL DELIVERY
LOW IDLE
Speed
                 1/min : 250
Contr.-rod trav.mm: 5.20...5.40
Del.quantity cm3/: 12.0...18.0
1000H.: (9.0...21.0)
Dispersion cm3/: 8.00
1000H.: (12.00)
Remarks:
```

Note inst. in remarks column

Test sheet : MB 9.5 A3 Edition : 09.03.87 Superceeded : 11.85 Calibrating oil : ISC-4113

Combination no. : 0 402 045 024

Injection pump

Pump designation : PESSP110A820LS434 EP type number : 0 412 015 020

Governor

Governor design. : RQV300...1100PA594-1 Governer no. : 0 421 813 336 Governer no.

Customer-spec. information

: DAIMLER-BENZ Gustomer -

Engine : 0M409

1st version kW : 135.0 Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. OC

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow.

quantity min. 1/h: 100...120

Calibrating nozzle-holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values

START OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2.95...3.15) Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 3- 5- 4- 2 SD ang. spacing CS: 0-72-144-216-288 Tolerance + - : 0.50 (0.75) SD mark cyl. no. : 5 BASIC SETTING 1/mi: 1100 1st speed Contr.-rod trav.mm: 11.00...11.10 Del.quantity cm3/: 11.0...11.2 100H.: (10.7...11.5) Dispersion cm3/:0.4100H.: (0.8) 1/min: 300.0 2nd speed SLEEVE POSITION Control-lever position Degree: -1 Speed 1/min: 1150 Cont.-rod travelmm: 15.20...17.80 FULL-LOAD DELIV. AT FULL-LOAD STOP 1st version 1/min: 1100 Speed Del.quantity cm3/: 110.0...112.0 1000H.: (107.0...115.0) Dispersion cm3/: 4.00 1000H.: (8.00) HIGHEST RATED SPEED 1st version Control-lever position degrees: 56...64 Testing: 1st c-rod trav.mm : 10.00 Speed 1/min : 1140...1150 2nd c-rod tray.mm : 4.00 1/min : 1175...1205 Speed 4th speed 1/min: 1300 C-rod trav.mm : 0.00...1.00

**KO1** 

LOWEST RATED SPEED I Control-lever position degrees: 22...30 Testing: 1/min : 100 Speed C-rod trav.mm min: 9.50 Speed 1/min: 300 C-rod trav.mm : 8.00...8.20 CONSTANT REGULATION 1/min : 320...435 Speed SWITCH-OVER POINT 1/min : 220 (240) Speed FUEL-DELIVERY CHARACTERISTICS 1/min : 600 Speed Del.quantity cm3/: 91.0...93.0 1000H: (88.0...96.0) cm3/:-Dispersion

ROTATIONAL-SPEED LIMITATION

1st version 1mm control-rod travel less than

1000H.: (9.00)

full-load trav.mm: 10.00 Speed 1/min: 1140...1150

STARTING FUEL DELIVERY

Remarks:

```
: 3.00...3.10 : (2.95...3.15)
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                       Prestroke mm
                                                       Contr.-rod trav.mm: 9.00...12.00
Note inst. in remarks column
                                                       Cam sequence : 6-2-4-1-5-3
Test sheet
Edition
Superceeded
                   : MB 11,4 A
                   : 14.08.87
                   : 10.83
                                                       SD ang. spacing ^{0}CS: 0-60-120-180-240-300 Tolerance + - ^{0}: 0.50 (0.75)
Calibrating oil : ISO-4113
Combination no. : 0 402 046 148
                                                       SD mark cyl. no. : 6
Injection pump
Pump designation : PES6P100A820LS351
                                                       BASIC SETTING
EP type number : 0 412 006 028
Governor
                                                       1st speed 1/mi: 1100
Governor design. : RQ300/1100PA327R
Governer no.
                   : 0 421 801 062
                                                       Contr.-rod trav.mm: 13.20...13.30
                                                       Del.quantity cm3/ : 12.2...12.4
Customer-spec. information
Customer
                   : DAIMLER-BENZ
                                                                      100H.: (12.0...12.6)
Engine
                    : OM 407
                                                                      cm3/:0.3
                                                       Dispersion
1st version kW : 176.5
              1/min: 2200
                                                                      100H.: (0.6)
Speed
                                                       2nd speed 1/min: 300
Contr.-rod trav. m: 7.50...7.70
Del.quantity cm3/: 0.6...1.2
100H.: (0.3...1.4)
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                    : 38...42
                                                                      cm3/:0.3
                                                       Dispersion
                                                                      100H.: (0.5)
Overflow valve
                    : 1 417 413 025
                                                       SLEEVE POSITION
Inlet press., bar : 1.50
                                                       Control-lever position
                                                                    Degree: -1
1/min: 500
Overflow
                                                       Speed
                                                       Cont.-rod travelmm: 14.30...15.10
 quantity min. 1/h: 100...120
                                                       FULL-LOAD DELIV. AT FULL-LOAD STOP
Calibrating nozzle-holder
 assembly : 0 681 343 009
                                                       1st version
                                                       Speed 1/min: 1100
Del.quantity cm3/: 122.0...124.0
1000H.: (120.0...126.0)
Dispersion cm3/: 3.00
1000H.: (6.00)
Opening
pressure, bar : 172...175
Test inj. tubing : 1 680 750 015
                                                       HIGHEST RATED SPEED
Outside diameter
x Wall thickness
                                                       1st version
                    : 6.00x1.50x600
                                                       Control-lever
x Length mm
                                                        position degrees: 41...49
(A) Injection pump setting values
    Insp. values in parentheses
                                                       Setting point:
    Set constant delivery quant.
                                                       Speed
                                                                   1/min : 500
                                                       Contr.-rod trav.mm: 14.7
    per values
START OF DELIVERY
                                                       Testing:
                                                       1st c-rod trav.mm : 12.20
Speed 1/min : 1145...1160
Test pressure, bar: 25...27
K03
```

2nd c-rod trav.mm: 4.00 Speed 1/min: 1200...1230 4th speed 1/min: 1350 C-rod trav.mm: 0.00...1.50 LOWEST RATED SPEED I Control-lever position degrees: 10...18 Setting point w/out aux. spring Speed 1/min : 300 Contr.-rod trav.mm: 7.6 Testing: Speed 1/min : 100 C-rod trav.mm min: 9.60 1/min : 300 Speed : 7.60 : 2.00 C-rod trav.mm C-rod trav.mm 1/min : 370...410 Speed SETTING CONTROL-ROD STOP 1/min : 500 Speed ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than ful!-load trav.mm: 12.20 peed 1/min: 1145...1160 Speed STARTING FUEL DELIVERY Speed 1/min : 100 Del.quantity cm3/: 135.0...155.0 1000H.: (131.0...159.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS	Prestroke mm : 2.802.90 : (2.752.95)
Note inst. in remarks column	Contrrod trav.mm: 9.0012.00   Cam sequence : 1- 5- 3- 6- 2- 4
Test sheet : RVI 8.8 B1 Edition : 18.8.87 Superceeded : 9.86 Galibrating oil : ISO-4.13	
Combination no. : 0 402 046 226	START OF DELIVERY DIFFERENCE
Injection pump Pump designation : PES6P120A320RS417 EP type number : 0 412 026 036	
Governor	I BASIC SETTING
Governor design. : RQV3001150PA527K Governer no. : 0 421 815 164	   1st speed
Customer-spec. information Customer : RVI	Contrrod trav.mm: 8.408.50
	Del.quantity cm3/: 14.314.5
Engine : MIDS 062030	100H.: (14.014.8)
1st version kW : 158.1 Speed 1/min: 2300	Dispersion cm3/: 0.5
TEST BENCH REQUIREMENTS	100H.: (0.9)
Calibrating-oil inlet temp. °C : 3842	2nd speed 1/min: 600 Contrrod trav. m: 3.003.20 Del.quantity cm3/: 1.82.4 1 100H.: (1.52.7)
Overflow valve : 1 417 413 025	1 100H.: (1.52.7) 1 Dispersion cm3/: 0.8 1 100H.: (1.2)
Inlet press., bar : 1.50	(B) Setting of injection pump with
Calibrating nozzle-holder assembly : 1 688 901 019	externally-mounted governor
Opening pressure, bar : 207210	SLEEVE TRAVELS 1 1st speed 1/min: 300 1 Sleeve travel mm: 1.702.10 2nd speed 1/min: 900
Perforated-plate diameter mm : 0.8	Sleeve travel mm: 5.806.20  Srd speed 1/min: 1150 Sleeve travel mm: 8.008.20
Test inj. tubing : 1 680 750 067	SLEEVE POSITION Control-lever position
Outside diameter  x Wall thickness	l Degree: -1 l Speed 1/min: 1190
x Length mm : 6.00x1.50x1000	Controd travelmm: 15.2017.80
(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values	FULL-LOAD DELIV. AT FULL-LOAD STOP  1
START OF DELIVERY Test pressure, bar: 2527	Del.quantity cm3/: 143.0145.0 1 1000H.: (140.0148.0) Dispersion cm3/: 5.00 1 1000H.: (9.00)
К06	

```
HIGHEST RATED SPEED
1st version
Control-lever
 position degrees: 113...121
Testing:
1st c-rod trav.mm : 7.40
           1/min : 1235...1245
  Speed
2nd c-rod trav.mm : 4.00
            1/min : 1290...1320
1/min : 1450
  Speed
4th speed
  C-rod trav.mm : 0.00...1.00
LOWEST RATED SPEED I
Control-lever
 position degrees: 62...70
            17min : 300
Speed
               : 3.20...3.40
C-rod trav.mm
           1/min : 100
Speed
C-rod trav.mm max: 6.20
CONSTANT REGULATION
            1/min : 320...440
Speed
TORQUE CONTROL
Torque-control curve - 1st version
1st speed 1/min : 1150
C-rod trav.mm : 8.40
2nd speed 1/min : 750
  C-rod trav.mm : 7.40...7.50
3rd speed 1/min: 500
 C-rod trav.mm : 6.80...7.10
4th speed 1/min: 350
  C-rod trav.mm : 6.60...7.00
SWITCH-OVER POINT
            1/min : 220 (240)
Speed
FUEL-DELIVERY CHARACTERISTICS
Speed
            1/min : 750
Del.quantity cm3/: 120.0...126.0
1000H.: (117.0...129.0)
Speed 1/min: 500
Del.quantity cm3/: 67.0...73.0
             1000H.: (64.0...76.0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 7.40
            1/min : 1235...1245
Speed
STARTING FUEL DELIVERY
Speed
            1/min : 100
```

**K07** 

Del.quantity cm3/: 125.0...145.0 1000H.: (121.0...149.0)

LOW IDLE

Speed 1/min: 300 Contr.-rod trav.mm: 3.20...3.40 Del.quantity cm3/: 18.0...24.0 1000H.: (15.0...27.0)

1000H.: (15.0...27.0)
Dispersion cm3/: 8.00
1000H.: (12.00)

Remarks: Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

```
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 5- 3- 6- 2- 4
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                  : RVI 8,8 B2
: 18.8.87
Test sheet
                                                      SD ang. spacing ^{0}CS: 0-60-120-180-240-300 Tolerance + - ^{0}: 0.50 (0.75)
Edition
Superceeded
                   : 5.84
Calibrating oil : ISO-4113
                                                      START OF DELIVERY DIFFERENCE
Combination no. : 0 402 046 247
                                                      betw.c-rod trav.mm: 10.00...11.00
Injection pump
Pump designation : PES6P120A320RS417
                                                      BASIC SETTING
                   : 0 412 026 036
EP type number
Governor
                                                      1st speed 1/mi: 1150
Governor design.
                   : R2V300...1150PA
                                                      Contr.-rod trav.mm: 8.50...8.60
                      S27-1K
                   : 0 421 815 165
Governer no.
                                                      Del.quantity cm3/: 14.4...14.6
Customer-spec. information
Customer
                   : RVI
                                                                     100H.: (14.1...14.9)
Engine
                    : MIDR 062030
                                                      Dispersion
                                                                    cm3/:0.5
TEST BENCH REQUIREMENTS
                                                                    100H.: (0.9)
                                                      2nd speed 1/min: 600.0
Contr.-rod trav. m: 2.70...2.90
Del.quantity cm3/: 1.8...2.4
Calibrating-oil inlet temp. C
                    : 38...42
                                                                    100H.: (1.5...2.7) cm3/: 0.8
Overflow valve
                    : 1 417 413 025
                                                      Dispersion
                                                                    100H.: (1.2)
Inlet press., bar: 1.50
                                                      (B) Setting of injection pump with
Calibrating nozzle-holder
                                                          externally-mounted governor
 assembly
               : 1 688 901 019
                                                      SLEEVE TRAVELS
                                                      1st speed 1/min: 300
Opening
 pressure, bar : 207...210
                                                        Sleeve travel mm: 1.70...2.10
                                                      2nd speed 1/min: 900
                                                      Sleeve travel mm: 5.80...6.20
3rd speed 1/min: 1150
Sleeve travel mm: 8.00...8.20
Perforated-plate
 diameter mm
                    : 0.8
Test inj. tubing : 1 680 750 067
                                                      SLEEVE POSITION
                                                      Control-lever position
Outside diameter
                                                                   Degree: -1
x Wall thickness
                                                                    17min: 1190
                   : 6.00x1.50x1000
                                                      Cont.-rod travelmm: 15.20...17.80
x Length mm
                                                      FULL-LOAD DELIV. AT FULL-LOAD STOP
(A) Injection pump setting values
    Insp. values in parentheses
    Set constant delivery quant.
                                                      1st version
                                                                    1/min: 1150
    per values
                                                      Speed
                                                      Del.quantity cm3/: 144.0...146.0
                                                                   1000H.: (141.0...149.0)
cm3/ : 5.00
1000H.: (9.00)
START OF DELIVERY
Test pressure, bar: 25...27
                                                      Dispersion
Prestroke min : 2.80...2.90
                                                      HIGHEST RATED SPEED
                    : (2.75...2.95)
K08
```

```
1st version
Control-lever
 position degrees: 56...64
Testing:
1st c-rod trav.mm : 7.50
            1/min: 1205...1215
  Speed
2nd c-rod trav.mm : 4.00
             1/min: 1260...1290
  Speed
4th speed
             1/min : 1450
  C-rod trav.mm : 0.00...1.00
LOWEST RATED SPEED I
Control-lever
 position degrees: 6...14
Testing:
             1/min : 100
Speed
C-rod trav.mm min: 6.30
           1/min : 300
.mm : 3.30...3.50
Speed
C-rod trav.mm
CONSTANT REGULATION
             1/min : 320...440
Speed
TORQUE CONTROL
Torque-control curve - 1st version
1st speed 1/min : 1150
  C-rod trav.mm : 8.50...8.60
  d speed 1/min : 750
C-rod trav.mm : 7.60...7.70
2nd speed
            1/min : 500
3rd speed
  C-rod trav.mm : 7.00...7.20
4th speed 1/min: 350
  C-rod trav.mm : 7.00...7.20
SWITCH-OVER POINT
            1/min : 220 (240)
Speed
FUEL-DELIVERY CHARACTERISTICS
            1/min : 750
Speed
Del.quantity cm3/: 122.0...128.0
1000H:: (119.0...131.0)
Speed 1/min: 500
Del.quantity cm3/: 69.0...75.0
             1000H.: (66.C...78.0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 7.50
            1/min : 1205...1215
Speed
STARTING FUEL DELIVERY
Speed
            1/min : 100
```

K09

Del.quantity cm3/: 140.0...160.0 1000H.: (136.0...164.0)

LOW IDLE

Dispersion cm3/: 8.00 1000H.: (12.00)

Remarks: Start-of-delivery mark 6° cam angle after start of delivery cyl. 1

```
: 3.20...3.30
: (3.15...3.35)
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                    Prestroke mm
                                                    Contr.-rod trav.mm: 9.00...12.00
Note inst. in remarks column
                                                    Cam sequence : 6-2-4-1-5-3
Test sheet
Edition
Superceeded
                  : MB 11,4 L10
                  : 09.03.87
Superceeded : 11.85
Calibrating oil : ISO-4113
                                                    SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Combination no. : 0 402 046 299
                                                    SD mark cyl. no. : 6
Injection pump
Pump designation : PES6P110A820LS442
                                                    BASIC SETTING
EP type number : 0 412 016 060
                                                    1st speed 1/mi: 950
Governor
Governor design. : RQ250/950PA483-3
Governer no. : 0 421 801 363
                                                    Contr.-rod trav.mm: 11.40...11.50
                                                    Del.quantity cm3/: 11.0...11.2
Customer-spec. information
Customer
                  : DAIMLER-BENZ
                                                                  100H.: (10.7...11.5)
Engine
                   : 0M407
                                                                  cm3/:0.4
                                                    Dispersion
1st version kW : 147.0
             1/min: 1900
                                                                  100H.: (0.8)
Speed
                                                    2nd speed 1/min: 250

Contr.-rod trav. m: 8.40...8.60

Del.quantity cm3/: 1.4...2.0

100H.: (1.1...2.2)

Dispersion cm3/: 0.4
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                   : 38...42
                                                                  100H.: (0.7)
Overflow valve
                   : 1 417 413 025
                                                    SLEEVE POSITION
Inlet press., bar : 1.50
                                                    Control-lever position
                                                                Degree: -1
1/min: 600
                                                    Speed
Over flow
                                                    Cont.-rod travelmm: 13.00...14.00
 quantity min. 1/h: 100...120
                                                    FULL-LOAD DELIV. AT FULL-LOAD STOP
Calibrating nozzle-holder
            : 0 681 343 009
 assembly
                                                    1st version
                                                    Opening
pressure, bar : 172...175
Test inj. tubing : 1 680 750 015
Outside diameter
                                                    HIGHEST RATED SPEED
x Wall thickness
                                                    1st version
                  : 6.00x1.50x600
                                                    Control-lever
x Length mm
                                                     position degrees: 36...44
(A) Injection pump setting values
    Insp. values in parentheses
                                                    Setting point:
                                                                1/min : 600
    Set constant delivery quant.
                                                    Speed
                                                    Contr.-rod trav.mm: 13.5
    per values
START OF DELIVERY
                                                    Testing:
                                                    1st c-rod trav.mm : 10.40
Test pressure, bar: 25...27
                                                      Speed 1/min: 995...1010
```

```
2nd c-rod trav.mm : 4.00
Speed 1/min : 1040...1070
4th speed 1/min : 1150
  C-rod trav.mm : 0.00...1.00
LOWEST RATED SPEED I
Setting point w/out aux. spring
Speed
             1/min : 250
Contra-rod trav.mm: 8.1
Testing:
Speed 1/min: 100
C-rod trav.mm min: 9.70
Speed 1/min: 250
                  : 8.10
C-rod trav.mm
             mm : 2.00
1/min : 330...370
C-rod trav.mm
Speed
FUEL-DELIVERY CHARACTERISTICS
Speed 1/min: 600
Del.quantity cm3/: 97.0...101.0
1000H.: (94.0...104.0)
Dispersion cm3/: 6.00
1000H.: (9.00)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 10.40
             1/min: 995...1010
Speed
STARTING FUEL DELIVERY
Remarks:
```

```
: 3.20...3.30
: (3.15...3.35)
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                         Prestroke mm
                                                         Contr.-rod trav.mm: 9.00...12.00
Note inst. in remarks column
                                                         Cam sequence : 6-2-4-1-5-3
Test sheet
                    : MB 11,4 L3
Edition
                    : 09.03.87
Superceeded
Superceeded : 11.85
Calibrating oil : ISO-4113
                                                         SD ang. spacing ^{\circ}CS: 0-60-120-180-240-300 Tolerance + - ^{\circ} : 0.50 (0.75)
Combination no. : 0 402 046 301
                                                         SD mark cyl. no. : 6
Injection pump
Pump designation : PES6P110A820LS442
                                                         BASIC SETTING
EP type number
                    : 0 412 016 060
                                                         1st speed 1/mi: 1100
Governor
Governor design. : RQV300...1100PA594-3
Governer no. : 0 421 813 324
                                                         Contr.-rod trav.mm: 10.90...11.00
                                                         Del.quantity cm3/ : 11.3...11.5
Customer-spec. information
                    : DAIMLER-BENZ
Customer
                                                                         100H.: (11.0...11.8)
Engine
                     : 407 STEHEND
                                                         Dispersion
                                                                        cm3/:0.4
1st version kW : 162.0
                                                                        100H.: (0.8)
Speed
               1/min: 2200
                                                         2nd speed 1/min: 300

Contr.-rod trav. m: 8.00...8.20

Del.quantity cm3/: 1.4...2.0

100H.: (1.1...2.2)

Dispersion cm3/: 0.4
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. <sup>D</sup>C
                     : 38...42
Overflow valve
                                                                        100H.: (0.7)
                     : 1 417 413 025
                                                         SLEEVE POSITION
Inlet press., bar: 1.50
                                                         Control-lever position
                                                         Degree: -1
Speed 1/min: 1100
Cont.-rod travelmm: 15.20...17.80
Overflow
 quantity min. 1/h: 100...120
Calibrating nozzle-holder
                                                         FULL-LOAD DELIV. AT FULL-LOAD STOP
 assembly
              : 0 681 343 009
                                                         1st version
                                                                        1/min: 1100
Opening
                                                         Speed
                                                         Del.quantity cm3/: 113.0...115.0
1000H.: (110.0...118.0)
Dispersion cm3/: 4.00
1000H.: (8.00)
pressure, bar : 172...175
Test inj. tubing : 1 680 750 015
                                                         HIGHEST RATED SPEED
Outside diameter
                                                         1st version
x Wall thickness
                    : 6.00x1.50x600
x Length mm
                                                         Control-lever
                                                          position degrees: 56...64
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                         Testing:
                                                         1st c-rod trav.mm : 9.90
                                                            Speed 1/min: 1140...1150
    per values
                                                         2nd c-rod trav.mm: 4.00
                                                                       1/min : 1175...1205
                                                            Speed
START OF DELIVERY
                                                                       1/min : 1300
Test pressure, bar: 25...27
                                                         4th speed
                                                           C-rod trav.mm : 0.00...1.00
```

```
LOWEST RATED SPEED I
Control-lever
 position degrees: 28...36
Testing:
Speed 1/min: 100
C-rod trav.mm min: 9.70
Speed 1/min: 300
C-rod trav.mm: 8.00...8.20
C-rod trav.mm
CONSTANT REGULATION
             1/min : 320...450
Speed
SWITCH-OVER POINT
             1/min: 220 (240)
Speed
FUEL-DELIVERY CHARACTERISTICS
Speed 1/min: 600
Del.quantity cm3/: 90.0...94.0
1000H.: (87.0...97.0)
Dispersion cm3/: 6.00
1000H.: (9.00)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 9.90
         1/min : 1140...1150
Speed
STARTING FUEL DELIVERY
Remarks:
```

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                        : 2.80...2.90
                                                     Prestroke mm
                                                                         : (2.75...2.95)
                                                     Contr.-rod trav.mm: 9.00...12.00
Note inst. in remarks column
                                                     Cam sequence : 1-5-3-6-2-4
Test sheet : RVI 9,8 A5
Edition : 09.03.87
Superceeded : 7.84
                                                     SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Calibrating oil : ISO-4113
Combination no. : 0 402 046 303
                                                     START OF DELIVERY DIFFERENCE
Injection pump
Pump designation : PES6P120A320RS419
                                                     betw.c-rod trav.mm: 10.00...11.00
EP type number : 0 412 026 037
Governor
                                                     BASIC SETTING
Governor design. : RQV275...1100PA495-7
Governer no. : 0 421 813 449
                                                                    1/mi: 1100
                                                     1st speed
                                                     Contr.-rod trav.mm: 7.80...7.90
Customer-spec. information
Customer
                   : RVI
                                                     Del.quantity cm3/: 13.2...13.4
                   : MIDR 062045
Engine
                                                                   100H.: (12.9...13.7)
1st version kW : 157.0
Speed
        1/min: 2200
                                                     Dispersion
                                                                   cm3/:0.5
TEST BENCH REQUIREMENTS
                                                                   100H.: (0.9)
Calibrating-oil inlet temp. C
                                                     2nd speed
                                                                   1/min: 275
                                                     Contr.-rod trav. m: 4.60...4.80
Del.quantity cm3/: 1.7...2.3
100H.: (1.4...2.6)
                  : 38...42
Overflow valve
                                                                   cm3/: 0.8
100H.: (1.2)
                   : 1 417 413 025
                                                     Dispersion
Inlet press., bar : 1.50
                                                     (B) Setting of injection pump with
                                                         externally-mounted governor
Calibrating nozzle-holder
                 : 1 688 901 019
 assembly
                                                     SLEEVE TRAVELS
                                                     1st speed 1/min: 275
Opening
 pressure, bar : 207...210
                                                       Sleeve travel mm: 1.30...1.50
                                                     2nd speed 1/min: 450
Perforated-plate
                                                       Sleeve travel mm: 3.30...3.70
                                                     3rd speed 1/min: 850
 diameter mm
                  : 0.8
                                                       Sleeve travel mm: 6.00...6.20
                                                     4th speed 1/min: 1100
Sleeve travel mm: 7.70...7.90
Test inj. tubing : 1 680 750 067
Outside diameter
                                                     SLEEVE POSITION
                                                     Control-lever position
x Wall thickness
                   : 6.00x1.50x1000
                                                                  Degree: -1
x Length mm
                                                                  17min: 1175
                                                     Cont.-rod travelmm: 15.20...17.80
(A) Injection pump setting values
    inap, values in parentheses
Set constant delivery quant.
                                                     FULL-LOAD DELIV. AT FULL-LOAD STOP
    per values
                                                     1st version
START OF DELIVERY
                                                                   1/min: 1100
                                                     Speed
Test pressure, bar: 25...27
                                                     Charge press, hPa : 700
```

Del.quantity cm3/: 132.0...134.0 1000H.: (129.0...137.0) cm3/: 5.00 1000H.: (9.00) Dispersion HIGHEST RATED SPEED 1st version Control-lever position degrees: 60...68 Testing: 1st c-rod trav.mm : 6.80 Speed 1/min: 1185...1195
2nd c-rod trav.mm: 4.00
Speed 1/min: 1220...1250
4th speed 1/min: 1350 C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 5...13
Speed 1/min: 275
C-rod trav.mm : 3.40...3.60
Speed 1/min: 200 C-rod trav.mm max: 5.50 CONSTANT REGULATION 1/min : 285...405 Speed compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 500 Speed hPa : 700 Pressure Contr.-rod trav.mm: 7.80...7.90 Measurement Speed 1/min: 500 1st pressure hPa : -C-rod trav.mm : 7.30...7.40 2nd pressure hPa : 145 C-rod trav.mm : 7.50...7.60 SWITCH-OVER POINT 1/min : 195 (215) Speed FUEL-DELIVERY CHARACTERISTICS 1st version Charge press. hPa: 700 Speed 1/min: 700 Del.quantity cm3/: 120.0...126.0 1000H.: (117.0...129.0) Charge press. hPa : -Speed 1/min : 500

Del.quantity cm3/: 88.0...90.0 1000H.: (85.0...93.0)

ROTATIONAL-SPEED LIMITATION

1st version 1mm control-rod travel less than

full-load trav.mm: 6.80 Speed 1/min: 1185...1195

STARTING FUEL DELIVERY

Speed 1/min: 100 Del.quantity cm3/: 150.0...170.0 1000H.: (146.0...174.0)

LOW IDLE

Speed 1/min: 275 Contr.-rod trav.mm: 3.40...3.60

Start-of-delivery mark 11.5° cam angle after start of delivery cyl. 1

APPLICATION
Special-purpose vehicle

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                             : 3.50...3.60
                                                        Prestroke mm
                                                                            : (3.45...3.65)
Note inst. in remarks column
                                                        Contr.-rod trav.mm: 9.00...12.00
                                                        Cam sequence : 1- 4- 2- 6- 3- 5
Test sheet
                    : ROL 12.2 J
: 15.05.87
Edition
Superceeded
                                                        SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Calibrating oil : ISO-4113
Combination no. : 0 402 046 327
                                                        BASIC SETTING
Injection pump
Pump designation : PES6P120A320RS3177
                                                        1st speed 1/mi: 900
EP type number : 0 412 026 725
                                                        Contr.-rod trav.mm: 10.70...10.80
Governor
Governor design. : RQV250...950PA830-1
Governer no. : 0 421 813 580
                                                        Del.quantity cm3/: 18.9...19.1
Customer-spec. information
                                                                       100H.: (18.6...19.4)
Customer
                    : ROLLS ROYCE
                                                                       cm3/:0.5
                                                        Dispersion
Engine
                   : EAGLE LES
                                                                       100H.; (0.9)
1st version kW : 265.0
                                                        2nd speed 1/min: 250.0
Contr.-rod trav. m: 5.7...5.9
Del.quantity cm3/: 2.3...2.9
100H.: (2.0...3.2)
              1/min: 1900
Speed
TEST BENCH REQUIREMENTS
                                                                       cm3/: 0.8
100H.: (1.2)
Calibrating-oil inlet temp. OC
                                                        Dispersion
                    : 38...42
Overflow valve
                                                        (B) Setting of injection pump with
                     : 1 417 413 025
                                                            externally-mounted governor
Inlet press., bar: 1.50
                                                        SLEEVE TRAVELS
                                                        1st speed 1/min: 250
Calibrating nozzle-holder
                                                          Sleeve travel mm: 1.50...1.70
 assembly
                 : 1 688 901 019
                                                        2nd speed 1/min: 350
                                                          Sleeve travel mm: 2.20...2.70
                                                        3rd speed 1/min: 500
Opening
                                                        Sleeve travel mm: 3.00...3.40
4th speed 1/min: 1000
Sleeve travel mm: 8.00...8.20
 pressure, bar : 207...210
Perforated-plate
                                                        5th speed 1/min: 1060
Sleeve travel mm: 8.90...9.20
                    : 0.8
 diameter mm
Test inj. tubing : 1 680 750 067
                                                        SLEEVE POSITION
                                                        Control-lever position
                                                        Degree: -1
Speed 1/min: 1025
Cont.-rod travelmm: 15.20...17.80
Outside diameter
x Wall thickness
                   : 6.00x1.50x1000
x Length mm
                                                        FULL-LOAD DELIV. AT FULL-LOAD STOP
(A) Injection pump setting values
    Insp. values in parentheses
    Set constant delivery quant,
                                                        1st version
    per values
                                                                       1/min: 900
                                                        Speed
                                                        Del.quantity cm3/: 189.0...191.0
                                                       1000H.: (186.0...194.0)
Dispersion cm3/: 5.00
1000H.: (9.00)
START OF DELIVERY
Test pressure, bar: 25...27
K16
```

HIGHEST RATED SPEED 1st version Control-lever position degrees: 48...56 Testing: 1st c-rod trav.mm : 9.70 1/min: 990...1000 Speed 2nd c-rod trav.mm : 4.00 Speed 1/min: 1050...1080 th speed 1/min: 1200 C-rod trav.mm: 0.00...1.00 4th speed LOWEST RATED SPEED I Control-lever position degrees: 15...23 Testing: Testing:
Speed 1/min: 100
C-rod trav.mm min: 7.30
Speed 1/min: 250
C-rod trav.mm : 5.70...5.90 CONSTANT REGULATION Speed 1/min : 250...540 SWITCH-OVER POINT Speed 1/min : 170 (190) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 9.70 Speed 1/min : 990...1000 STARTING FUEL DELIVERY Remarks:

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                        START OF DELIVERY
Note inst. in remarks column
                                                        Test pressure, bar: 25...27
Test sheet
                    : NB 11,4 I3
                                                                             : 4.00...4.10
                                                        Prestroke mm
                     : 09.03.87
                                                                             : (3.95...4.15)
Edition
Superceeded
                    : 7.85
                                                        Contr.-rod trav.mm: 9.00...12.00
                  : ISO-4113
                                                        Cam sequence : 6-2-4-1-5-3
Calibrating oil
                     : 0 402 046 727
Combination no.
                                                        SD ang. spacing ^{\circ} CS: 0-60-120-180-240-300 Tolerance + - ^{\circ} : 0.50 (0.75)
Injection pump
Pump designation : PES6P120A820
                     LS3077-10
EP type number
                     : 0 412 026 714
                                                        SD mark cyl. no. : 6
Governor
Governor design. : RQ300/1100PA603
Governer no. : 0 421 801 153
                                                        BASIC SETTING
                                                        1st speed 1/mi: 1100
Customer-spec. information
Customer
                    : DAIMLER-BENZ
                                                        Contr.-rod trav.mm: 11.70...11.80
Engine
                     : 0M407 HA
                                                        Del.quantity cm3/: 18.4...18.6
1st version kW : 206.0
                                                                       100H.: (18.1...18.9)
               1/min: 2200
Speed
                                                                       cm3/:0.5
                                                        Dispersion
TEST BENCH REQUIREMENTS
                                                                       100H.: (0.9)
Calibrating-oil inlet temp. °C
                     : 38...42
                                                        2nd speed
                                                                       1/min: 300
                                                        Contr.-rod trav. m: 5.00...5.20
                                                        Del.quantity cm3/: 1.4...2.0
100H:: (1.1...2.3)
Dispersion cm3/: 0.8
100H:: (1.2)
Overflow valve
                     : 1 417 413 025
Inlet press., bar: 1.50
Over flow
                                                        SLEEVE POSITION
 quantity min. 1/h: 100...120
                                                        Control-lever position
                                                                     Degree: -2
1/min: 650
Calibrating nozzle-holder
                                                        Speed
                                                        Cont.-rod travelmm: 19.10...20.80
                 : 1 688 901 019
 assembly
                                                        FULL-LOAD DELIV. AT FULL-LOAD STOP
Opening
                    : 207...210
 pressure, bar
                                                        1st version
Perforated-plate
                                                                       1/min: 1100
                                                        Speed
                                                        Charge press. hPa: 750
Del.quantity cm3/: 184.0...186.0
1000H.: (181.0...189.0)
Dispersion cm3/: 5.00
 diameter mm
                     : 0.8
Test inj. tubing : 1 680 750 067
                                                                      1000H.: (9.00)
Outside diameter
x Wall thickness
                                                        HIGHEST RATED SPEED
                    : 6.00x1.50x1000
x Length mm
                                                        Setting point:
(A) Injection pump setting values
                                                                     1/min : 650
    Insp. values in parentheses
Set constant delivery quant.
                                                        Contr.-rod trav.mm: 19.9
    per values ____
                                                        Testing:
K18
```

1st c-rod trav.mm : 10.70 Speed 1/min : 1145...1160 2nd c-rod trav.mm : 4.00 Speed 1/min: 1190...1220 4th speed 1/min: 1260 C-rod tray.mm : 0.00...1.00 LOWEST RATED SPEED I Setting point w/out aux. spring Speed 1/min: 300 Contr.-rod trav.mm: 5.1 Testing: 1/min : 100 Speed C-rod trav.mm min: 6.50 1/min : 300 Speed C-rod trav.mm : 5.10 : 2.00 C-rod trav.mm 1/min: 355...395 Speed TORQUE CONTROL Torque-control curve - 1st version 1/min : 1100 1st speed C-rod trav.mm : 11.70...11.80 2nd speed 1/min : 600 C-rod trav.mm : 12.30...12.40 3rd speed 1/min: 950 C-rod trav.mm : 12.00...12.20 compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 500 hPa : 750 Speed Pressure Contr.-rod trav.mm: 12.30...12.40 Measurement 1/min : 500 Speed 1st pressure hPa : -: 10.30...10.40 : 530 C-rod trav.mm 2nd pressure hPa : 11.70...11.80 C-rod trav.mm : 420 3rd pressure hPa : 10.80...11.00 C-rod trav.mm SWITCH-OVER POINT Speed 1/min : 220 (240) FUEL-DELIVERY CHARACTERISTICS Charge press. hPa : 750 1/min : 600 Speed Del.quantity cm3/: 187.0...193.0 1000H.: (184.0...196.0) cm3/:-1000H.: 12.00 Dispersion 1/min : 500 Speed

K19

Del.quantity cm3/: 145.0...147.0 1000H:: (142.0...150.0) Dispersion cm3/:-

1000H.: 12.00

ROTATIONAL-SPEED LIMITATION

1st version 1mm control-rod travel less than

full-load trav.mm: 10.70

Speed 1/min: 1145...1160

STARTING FUEL DELIVERY

Remarks: APPLICATION Omnibus

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                    : 4.30...4.40
                                                  Prestroke mm
                                                                    : (4.25...4.45)
                                                  Contr.-rod trav.mm: 9.00...12.00
Note inst. in remarks column
                                                  Cam sequence : 6- 2- 4- 1- 5- 3
Test sheet
                  : MB 11,7 A1
                  : 09.03.87
Edition
Superceeded
                  : 5.85
                                                  SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Calibrating oil : ISO-4113
                  : 0 402 046 750
Combination no.
                                                  SD mark cyl. no. : 6
Injection pump
Pump designation : PES6P110A820LS3131
                                                  BASIC SETTING
EP type number
                  : 0 412 016 715
Governor
                                                  1st speed
                                                              1/mi: 1100
Governor design. : RQ300/1100PA722
Governer no. : 0 421 801 264
                                                  Contr.-rod trav.mm: 9.40...9.50
Customer-spec. information
                                                  Del.quantity cm3/: 11.0...11.2
Customer
                  : DAIMLER-BENZ
                                                               100H.: (10.7...11.4)
                  : 0M427H
Engine
                                                               cm3/:0.4
                                                  Dispersion
1st version kW : 150.0
            1/min: 2200
                                                               100H.: (C.8)
Speed
                                                  2nd speed 1/min: 300
Contr.-rod trav. m: 7.20...7.40
Del.quantity cm3/: 1.4...2.0
100H.: (1.1...2.2)
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. C : 38...42
                                                  Dispersion
                                                               cm3/:0.4
                                                               100H.: (0.8)
Overflow valve
                  : 1 417 413 025
                                                  SLEEVE POSITION
Inlet press., bar : 1.50
                                                  Control-lever position
                                                              Degree: -1
                                                              1/min: 600
Overflow
                                                  Speed
                                                  Cont.-rod travelmm: 13.00...14.00
 quantity min. 1/h: 100...110
                                                  FULL-LOAD DELIV. AT FULL-LOAD STOP
Calibrating nozzle-holder
 assembly : 0 681 343 009
                                                  1st version
                                                               1/min: 1100
                                                  Speed
Opening
                                                 pressure, bar : 172...175
Test inj. tubing : 1 680 750 015
Outside diameter
                                                  HIGHEST RATED SPEED
x Wall thickness
x Length mm
                  : 6.00x1.50x600
                                                  1st version
                                                  Control-lever
                                                   position degrees: 97...103
(A) Injection pump setting values
    Insp. values in parentheses
    Set constant delivery quant.
                                                  Setting point:
    per values ____
                                                  Speed 1/min: 600
                                                  Contr.-rod trav.mm: 13.5
START OF DELIVERY
Test pressure, bar: 25...27
                                                  Testing:
                                                  1st c-rod trav.mm : 8.40
K20
```

```
1/min : 1145...1160
  Speed
2nd c-rod trav.mm : 4.00
             1/min : 1195...1225
1/min : 1300
  Speed
4th speed
  C-rod trav.mm : 0.00...1.50
LOWEST RATED SPEED I
Control-lever
 position degrees: 75...81
Setting point w/out aux. spring
Speed 1/min: 300 Contr.-rod trav.mm: 7.3
Testing:
             1/min : 100
Speed
C-rod trav.mm min: 8.80
Speed 1/min: 300
C-rod trav.mm
                : 7.30
                  : 2.00
C-rod trav.mm
             1/min : 380...420
Speed
TORQUE CONTROL
Dimension a mm : 0.50
Torque-control curve - 1st version
1st speed 1/min : 1100
  C-rod trav.mm : 9.40...9.50
2nd speed 1/min: 500
C-rod trav.mm : 10.20...10.40
3rd speed 1/min : 850
  C-rod trav.mm : 9.80...10.10
4th speed 1/min: 950
  C-rod trav.mm : 9.60...9.80
FUEL-DELIVERY CHARACTERISTICS
1st version
Charge press. hPa : -
             1/min : 500
Speed
Del.quantity cm3/: 96.0...100.0
1000H.: (93.0...103.0)
             cm3/: 6.00
1000H.: (9.00)
Dispersion
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 8.40
             1/min : 1145...1160
Speed
STARTING FUEL DELIVERY
             1/min : 100
Speed
Del.quantity cm3/: 130.0...150.0
1000H.: (126.0...154.0)
Remarks:
```

K21

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,7 A3
Edition : 09.03.87
Superceeded : 7.85
Calibrating oil : ISO-4113

Combination no. : 0 402 046 751

Injection pump

Pump designation : PES6P110A820LS3131

EP type number : 0 412 016 715

Governor

Governor design. : RQ300/1100PA723-Governer no. : 0 421 801 265

Customer-spec. information

Customer : DAIMLER-BENZ

: 0M427H Engine

1st version kW : 177.0 Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Overflow

quantity min. 1/h: 100...110

Calibrating nozzle-holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant.

per values

START OF DELIVERY

Test pressure, bar: 25...27

```
: 4.30...4.40
Prestroke mm
(4.25...4.45)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 2- 4- 1- 5- 3
SD ang. spacing ^{0}CS: 0-60-120-180-240-300 Tolerance + - ^{0}: 0.50 (0.75)
SD mark cyl. no. : 6
BASIC SETTING
1st speed 1/mi: 1100
Contr.-rod trav.mm: 11.10...11.20
Del.quantity cm3/: 14.0...14.2
                 100H.: (13.7...14.5)
                 cm3/:0.4
Dispersion
                 100H.: (0.8)
2nd speed 1/min: 300

Contr.-rod trav. m: 7.10...7.30

Del.quantity cm3/: 1.4...2.0

100H.: (1.1...2.3)

Dispersion cm3/: 0.4

100H.: (0.7)
SLEEVE POSITION
Control-lever position
Degree: -2
Speed 1/min: 550
Cont.-rod travelmm: 14.70...16.40
FULL-LOAD DELIV. AT FULL-LOAD STOP
1st version
                1/min: 1100
Speed
Del.quantity cm3/: 140.0...142.0
1000H.: (137.0...145.0)
Dispersion cm3/: 4.00
1000H.: (8.00)
HIGHEST RATED SPEED
1st version
Control-lever
 position degrees: 94...100
Setting point:
Speed 1/min : 550
Contr.-rod trav.mm: 15.5
Testing:
1st c-rod trav.mm : 10.20
  Speed 1/min: 1145...1160
```

K23

2nd c-rod trav.mm : 4.00 Speed 1/min : 1180...1210 4th speed 1/min : 1300 C-rod trav.mm : 0.00...1.50 LOWEST RATED SPEED I Control-lever position degrees: 73...79 Setting point w/out aux. spring Speed 1/min: 300 Contr.-rod trav.mm: 7.2 Testing: Speed 1/min : 100 C-rod trav.mm min: 8.80 Speed 1/min : 300 C-rod trav.mm : 7.30 C-rod trav.mm : 2.00 Speed 1/min: 360...400 SWITCH-OVER POINT 1/min : 220 (240) Speed FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 600 Del.quantity cm3/: 117.0...121.0 1000H.: (114.0...124.0) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 10.20 Speed 1/min: 1145...1160 STARTING FUEL DELIVERY

Speed 1/min: 100 Del.quantity cm3/: 130.0...150.0 1009H.: (126.0...154.0)

Remarks:

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                    START OF DELIVERY
Note inst. in remarks column
                                                    Test pressure, bar: 25...27
Test sheet
                   : MB 11,4 I9
                                                                       : 4.00...4.10
                                                    Prestroke mm
                   : 30.03.87
                                                                       : (3.95...4.15)
Edition
Superceeded
                   : 4.85
                                                    Contr.-rod trav.mm: 9.00...12.00
                 : ISO-4113
                                                    Cam sequence : 6- 2- 4- 1- 5- 3
Calibrating oil
                   : 0 402 046 752
Combination no.
                                                    SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Injection pump
Pump designation : PES6P120A820
                    LS3077-10
                   : 0 412 026 714
EP type number
                                                    SD mark cyl. no. : 6
Governor
Governor design. : RQ250/950PA585-3
                                                    BASIC SETTING
Governer no.
                   : 0 421 801 266
                                                    1st speed 1/mi: 950
Customer-spec. information
                                                    Contr.-rod trav.mm: 11.60...11.70
                  : DAIMLER-BENZ
Customer
Engine
                   : 0M407A
                                                    Del.quantity cm3/: 18.3...18.5
1st version kW : 202.0
                                                                  100H.: (18.0...18.8)
Speed
              1/min: 1900
                                                    Dispersion
                                                                  cm3/:0.5
TEST BENCH REQUIREMENTS
                                                                  100H.: (0.9)
Calibrating-oil inlet temp. OC
                   : 38...42
                                                                  1/min: 250
                                                    2nd speed
                                                    Contr.-rod trav. m: 5.30...5.50 Del.quantity cm3/: 1.4...2.0
Overflow valve
                   : 1 417 413 025
                                                                  100H.: (1.1...2.3)
                                                                  cm3/: 0.8
100H.: (1.2)
                                                    Dispersion
Inlet press., bar : 1.50
Over flow
                                                    SLEEVE POSITION
 quantity min. 1/h: 100...120
                                                    Control-lever position
                                                                 Degree: -2
                                                                  17min: 650
Calibrating nozzle-holder
                                                    Speed
                  : 1 688 901 019
                                                    Cont.-rod travelmm: 19.20...20.80
 assembly
                                                    FULL-LOAD DELIV. AT FULL-LOAD STOP
Opening
                   : 207...210
 pressure, bar
                                                    1st version
                                                    Speed
Perforated-plate
                                                                  1/min: 950
                   : 0.8
                                                    Charge press. hPa: 700
 diameter mm
                                                    Del.quantity cm3/: 183.0...185.0
                                                                1000H.: (180.0...188.0) cm3/ : 5.00
Test inj. tubing
                  : 1 680 750 067
                                                    Dispersion
                                                                 1000H.: (9.00)
Outside diameter
x Wall thickness
                                                    HIGHEST RATED SPEED
                   : 6.00x1.50x1000
x Length mm
                                                    1st version
                                                    Control-lever
                                                     position degrees: 28...36
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                    Setting point:
    per values
                                                    Speed 1/min : 650
K25
```

Contr.-rod trav.mm: 20.0 Testing: 1st c-rod trav.mm : 10.60 1/min: 995...1010 Speed 2nd c-rod trav.mm: 4.00 1/min: 1030...1060 1/min: 1150 Speed 4th speed C-rod trav.mm : 0.00...1.50 LOWEST RATED SPEED I Control-lever position degrees: 7...15 Setting point W/out aux. spring Speed 1/min : 250 Contr.-rod trav.mm: 5.4 Testing: 1/min : 100 Speed C-rod trav.mm min: 7.10 Speed 1/min : 250 C-rod trav.mm : 5.40 C-rod trav.mm : 2.00 Speed 1/min : 270...330 compensator (LDA, ADA, ALDA) 1st version Setting Speed 1/min : 500 hPa : -Pressure Contr.-rod trav.mm: -Measurement 1/min : 500 Speed 1st pressure hPa : 270 C-rod trav.mm : 0.40...0.60 SWITCH-OVER POINT 1/min: 170 (190) Speed FUEL-DELIVERY CHARACTERISTICS 1st version Charge press. hPa : 700 Speed 1/min: 600
Del.quantity cm3/: 177.0...183.0
1000H.: (174.0...186.0)
Dispersion cm3/: 8.0
1000H.: (12.0) Charge press. hPa : -Speed 1/min: 500 Del.quantity cm3/: 144.0...146.0 1000H.: (141.0...149.0) cm3/: 8.00 1000H.: (-) Dispersion

K26

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.60

1/min: 995...1010 Speed

STARTING FUEL DELIVERY

Speed 1/min: 100

Del.quantity cm3/: 160.0...180.0 1000H.: (156.0...184.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : RVI 12,0 F1
Edition : 31.07.87
Superceeded : 4.85
Calibrating oil : ISO-4113

Combination no. : 0 402 046 758

Injection pump

Pump designation : PES6P120A320RS3139 EP type number : 0 412 026 718

Governor

Governor design. : RQV275...950PA728-1

Governer no. : 0 421 813 465

Customer-spec. information Customer : RVI

Engine : MIDR 063540

1st version kW : 243.0 Speed 1/min: 1900

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Perforated-plate

diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter

x Wall thickness x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values

START OF DELIVERY
Test pressure, bar: 25...27

Del.quantity cm3/: 230.0...232.0 1000H.: (227.0...235.0) Dispersion cm3/: 5.00 Prestroke mm : 3.50...3.60 : (3.45...3.65) Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1-5- 3- 6- 2- 4 1000H.: (9.00) HIGHEST RATED SPEED 1st version SD ang. spacing CS: 0-60-120-120-240-300 Tolerance + - : 0.50 (0.75) Control-lever position degrees: 59...67 START OF DELIVERY DIFFERENCE Testing: 1st c-rod trav.mm : 11.50 Speed 1/min : 1020...1030 betw.c-rod trav.mm: 10.00...11.00 2nd c-rod trav.mm: 4.00 Speed 1/min: 1155...1185 4th speed 1/min: 1250 BASIC SETTING 1st speed 1/mi: 950 C-rod tray.mm : 0.00...1.00 Contr.-rod trav.mm: 12.50...12.60 LOWEST RATED SPEED I Control-lever position degrees: 8...16
Speed 1/min: 275
C-rod trav.mm: 5.40...5.60 Del.quantity cm3/: 23.0...23.2 100H.: (22.7...23.5) Speed 1/min: 200 Dispersion cm3/:0.5C-rod trav.mm max: 7.00 100H.: (0.9) CONSTANT REGULATION 1/min : 300...400 Speed 2nd speed 1/min: 275.0 Contr.-rod trav. m: 5.40...5.60 Del.quantity cm3/: 2.0...2.6 compensator (LDA\_ADA\_ALDA) 100H.: (1.7...2.9) cm3/: 0.8 Dispersion 1st version 100H.: (1.2) Setting 1/min : 500 Speed (B) Setting of injection pump with externally-mounted governor hPa : 1000 Pressure Contr.-rod trav.mm: 12.50...12.60 SLEEVE TRAVELS Measurement 1st speed 1/min: 250 1/min : 500 Speed Sleeve travel mm: 1.00...1.20 2nd speed 1/min: 450
Steeve travel mm: 3.30...3.80
3rd speed 1/min: 800 1st pressure hPa : C-rod trav.mm : 9.40...9.50 2nd pressure hPa : 500 C-rod trav.mm : 11.70...11.80 3rd pressure hPa : 200 Sleeve travel mm: 5.80...6.00 4th speed 1/min: 950 Sleeve travel mm: 6.80...6.90 C-rod trav.mm : 9.80...10.40 SLEEVE POSITION SWITCH-OVER POINT Control-lever position 1/min : 195 (215) Degree: -1 Speed 17min: 1140 Speed Cont.-rod travelmm: 15.20...17.80 FUEL-DELIVERY CHARACTERISTICS FULL-LOAD DELIV. AT FULL-LOAD STOP 1st version 1st version Charge press. hPa : 1000 Speed 1/min: 950 Speed 1/min: 600 Charge press. hPa : 1000 Del.quantity cm3/: 235.0...241.0 1000H.: (232.0...244.0) K28

```
Charge press. hPa : -
           1/min: 950
Speed
Del.quantity cm3/: 149.0...151.0
          1000H.: (146.0...154.0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
full-load trav.mm: 11.50
         1/min : 1020...1030
Speed
STARTING FUEL DELIVERY
LOW IDLE
Speed
          1/min : 275
Start-of-delivery mark 9° cam angle after start of delivery cyl. 1.
```

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                         SD ang. spacing ^{\circ} CS: 0-60-120-180-240-300 Tolerance + - ^{\circ} : 0,50 (0,75)
Note inst. in remarks column
                    : KHD 9.6 N
: 18.8.87
Test sheet
                                                         SD mark cyl. no. : 1
Edition
Superceeded
                    : 9.86
                                                         BASIC SETTING
Calibrating oil : ISO-4113
                                                                         1/mi: 850
                                                         1st speed
Combination no. : 0 402 046 759
                                                         Contr.-rod trav.mm: 12,60...12,70
Injection pump
Pump designation : PES6P110A720RS3104
                                                         Del.quantity cm3/: 14,7...14,9
EP type number
                   : 0 412 016 712
                                                                        100H.: (14,4...15,2)
Governor
Governor design. : RQ900PA738
Governer no. : 0 421 801 278
                                                         Dispersion
                                                                        cm3/:0.40
Customer-spec. information
                                                                        100H.: (0,75)
Customer
                    : KHD
                                                         2nd speed 1/min: 300
Contr.-rod trav. m: 7,10...7,30
Del.quantity cm3/: 1,3...1,9
                     : BF6L413FR/C
Engine
                                                                        100H.: (1.0...2,1)
cm3/: 0,45
TEST BENCH REQUIREMENTS
                                                         Dispersion
                                                                        100H.: (0,75)
Calibrating-oil inlet temp. °C
                     : 38...42
                                                         FULL-LOAD DELIV. AT FULL-LOAD STOP
Overflow valve
                     : 1 417 413 025
                                                         1st version
                                                                        1/min: 850
                                                         Speed
                                                         Charge press. hPa : -
Inlet press., bar : 1.50
                                                        Del.quantity cm3/: 147,0...149,0
1000H.: (144,0...152,0)
Dispersion cm3/: 4,0
1000H.: (7,5)
Calibrating nozzle-holder
               : 0 681 343 009
 assembly
Opening
 pressure, bar : 172...175
                                                         HIGHEST RATED SPEED
                                                         1st version
                                                         Control-lever
Test inj. tubing : 1 680 750 015
                                                          position degrees: 37...45
Outside diameter
                                                         Testing:
x Wall thirkness
                                                         1st c-rod trav.mm : 11,60
                                                           Speed 1/min: 900...905
                     : 6,00x1,50x600
x Length mm
                                                         2nd c-rod trav.mm : 5.50
Speed 1/min : 936...945
(A) Injection pump setting values
                                                         4th speed 1/min: 1050
    Insp. values in parentheses
Set constant delivery quant.
                                                           C-rod trav.mm : 0.00...1.00
    per values ____
                                                         SWITCH-OVER POINT
START OF DELIVERY
                                                                      1/min : 750
Test pressure, bar: 25...27
                                                         Speed
                     : 2,80...2,90
: (2,75...2,95)
                                                         ROTATIONAL-SPEED LIMITATION
Prestroke mm
Contr.-rod trav.mm: 9,00...12,00
                                                         1st version
Cam sequence : 1-5-3-6-2-4
                                                         1mm control-rod travel less than
                                                          full-load trav.mm: 11,60
```

Speed 1/min: 900...905

STARTING FUEL DELIVERY

Speed 1/min: 100
Del.quantity cm3/: 170,0...200,0
1000H.: (-)

Remarks: APPLICATION Generator set BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.30...4.40 Prestroke mm : (4.25...4.45) Note inst. in remarks column Contra-rod trav.mm: 9.00...12.00 : 6- 2- 4- 1- 5- 3 Cam sequence Test sheet : MB 11.7 A6 : 13.05.87 Edition : 10.86 Superceeded SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) : ISO-4113 Calibrating oil : 0 402 046 767 Combination no. SD mark cyl. no. : 6 Injection pump : PES6P110A820LS3131 BASIC SETTING Pump designation EP type number : 0 412 016 715 1/mi: 1100 Governor 1st speed Governor design. Governer no. : RQ300/1100PA786 Contr.-rod trav.mm: 9.60...9.70 : 0 421 801 336 Del.quantity cm3/: 11.4...11.6 Customer-spec. information Customer : DAIMLER-BENZ 100H.: (11.1...11.8) Engine : OM447 cm3/:0.4Dispersion 1st version kW : 150.0 100H.: (0.8) 1/min: 2200 Speed 2nd speed 1/min: 300 Contr.-rod trav. m: 7.20...7.40 TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. °C Del.quantity cm3/: 1.4...2.0 100H: (1.1...2.2) cm3/: 0.4 100H: (0.8) : 38...42 Dispersion Overflow valve : 1 417 413 025 SLEEVE POSITION Inlet press., bar : 1.50 Control-lever position Degree: -1 1/min: 600 Over flow Speed Cont.-rod travelmm: 13.00...14.00 quantity min. 1/h: 100...120 FULL-LOAD DELIV. AT FULL-LOAD STOP Calibrating nozzle-holder : 0 681 343 009 assemb iy 1st version 1/min: 1100 Opening Speed Charge press. hPa : pressure, bar : 172...175 Del.quantity cm3/: 114.0...116.0 1000H.: (111.5...118.5) cm3/ : 4.00 Test inj. tubing : 1 680 750 015 Dispersion 1000H.: (8.00) Outside diameter HIGHEST RATED SPEED x Wall thickness : 6.00x1.50x600 x Length mm 1st version Control-lever (A) Injection pump setting values position degrees: 32...40 Insp. values in parentheses Set constant delivery quant. Setting point: 1/min : 600 per values Speed Contra-rod trav.mm: 13.5 START OF DELIVERY Testing: Test pressure, bar: 25...27 1st c-rod trav.mm : 8.60

L04

```
1/min: 1140...1155
  Speed
2nd c-rod trav.mm : 4.00
            1/min : 1200...1230
1/min : 1300
  Speed
4th speed
  C-rod trav.mm : 0.00...1.50
LOWEST RATED SPEED I
Control-lever
 position degrees: 11...19
Setting point w/out aux. spring
Speed 1/min: 300 Contr.-rod trav.mm: 7.3
Testing:
Speed
            1/min : 100
C-rod crav.mm min : 8.80
Speed
           1/min : 300
C-rod trav.mm
                : 7.30
C-rod trav.mm
                  : 2.00
           1/min : 360...400
Speed
TORQUE CONTROL
Dimension a mm
                : 0.50
Torque-control curve - 1st version
           1/min : 1100
1st speed
  C-rod trav.mm : 9.60...9.70
2nd speed 1/min: 600
  C-rod trav.mm : 10.30...10.60
FUEL-DELIVERY CHARACTERISTICS
1st version
Charge press. hPa : -
            1/min : 600
Speed
Del.quantity cm3/: 98.0...101.0
            1000H.: (95.0...104.0)
            cm3/: 6.00
1000H.: (9.00)
Dispersion
SETTING CONTROL-ROD STOP
Speed
            1/min : 500
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 8.60
           1/min : 1140...1155
Speed
STARTING FUEL DELIVERY
Remarks:
```

L05

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11.9 Edition : 09.03.87 Superceeded : 4.86 : MAN 11,9 D Calibrating oil : ISO-4113

Combination no. : 0 402 046 769

Injection pump

Pump designation : PES6P120A720LS3167 EP type number : 0 412 026 720

Governor

Governor design. : RQV300...1100PA667-2 Governer nc. : 0 421 813 524

Customer-spec. information Customer : MAN

Engine : D2866LE

1st version kW : 300.0 Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Perforated-plate

diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter

x Wall thickness x Length mm

: 6.00x3.00x1000

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values \_\_\_\_

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90 : (3.75...3.95)
Contr.-rod trav.mm: 9.00...12.00 HIGHEST RATED SPEED 1st version Cam sequence : 6- 2- 4- 1- 5- 3 Control-lever position degrees: 49...57 Testing: SD ang. spacing  $^{0}$ CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) 1st c-rod trav.mm : 11.60 Speed 1/min: 1140...1150 2nd c-rod trav.mm : 4.00 Speed 1/min: 1245...1275 th speed 1/min: 1400 SD mark cyl. no. : 6 4th speed BASIC SETTING C-rod trav.mm : 0.00...1.00 1/mi: 1100 1st speed LOWEST RATED SPEED I Control-lever Contr.-rod trav.mm: 12.60...12.70 position degrees: 13...21 Del.quantity cm3/: 23.4...23.6 Testing: Speed 1/min: 100 C-rod trav.mm min: 7.50 100H.: (23.1...23.9) 1/min : 300 Speed C-rod trav.mm : 5.90...6.10 Dispersion cm3/:0.5100H.: (0.9) CONSTANT REGULATION 1/min : 330...445 Speed 2nd speed 1/min: 300.0 Contrared trav. m: 5.9...6.1 Del.quantity cm3/: 1.7...2.3 SWITCH-OVER POINT 100H.: (1.4...2.6) Speed 1/min : 220 (240) cm3/: 0.8Dispersion 100H.: (1.2) ROTATIONAL-SPEED LIMITATION (B) Setting of injection pump with externally-mounted governor 1st version 1mm control-rod travel less than SLEEVE TRAVELS full-load trav.mm: 11.60 Speed 1/min: 1140...1150 1st speed 1/min: 300 Sleeve travel mm: 1.20...1.40 2nd speed 1/min: 500 MIDDLE RATED SPEED Sleeve travel mm: 3.30...3.50

3rd speed 1/min: 900

Sleeve travel mm: 5.90...6.20

4th speed 1/min: 1100

Sleeve travel mm: 7.60...7.80 Contr.-rod trav.mm: 4.00 STARTING FUEL DELIVERY 1/min : 100 Del.quantity cm3/: 200.0...220.0 1000H.: (196.0...224.0) SLEEVE POSITION Control-lever position Degree: -1 Speed 1/min: 1175 Cont.-rod travelmm: 15.20...17.80 LOW IDLE Speed 1/min: 300 Contr.-rod trav.mm: 5.90...6.10 FULL-LOAD DELIV. AT FULL-LOAD STOP Del.quantity cm3/: 17.0...23.0 1000H.: (14.0...26.0) 1st version cm3/: 8.00 1/min: 1100 Speed Dispersion Del.quantity cm3/: 234.0...236.0 1000H.: (231.0...239.0) Dispersion cm3/: 5.00 1000H.: (9.00) 1000H.: (12.00) Remarks: : MAN-NR. 2-7656

L07

APPLICATION Ship L08

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.50...3.60 Prestroke mm : (3.45...3.65) Note inst. in remarks column Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 4- 2- 6- 3- 5 Test sheet : ROL 12,2 H1 : 09.03.87 Edition Superceeded : 9.86 SD ang. spacing  $^{\circ}$  CS: 0-60-120-180-240-300 Tolerance + -  $^{\circ}$  : 0.50 (0.75) : ISO-4113 Calibrating oil Combination no. : 0 402 046 772 BASIC SETTING Injection pump Pump designation : PES6P120A320RS3170 1/mi: 900 1st speed EP type number : 0 412 026 722 Contr.-rod trav.mm: 12.90...13.00 Governor Governor design. : RQV250...950PA794-1 : 0 421 813 579 Governer no. Del.quantity cm3/: 21.5...21.7 100H.: (21.2...22.0) Customer-spec. information Customer : ROLLS ROYCE cm3/:0.5Dispersion Engine : EAGLE LE 100H.: (0.9) 1st version kW : 204.0 2nd speed 1/min: 250 Contr.-rod trav. m: 5.50...5.70 Del.quantity cm3/: 1.7...2.3 Speed 1/min: 1900 TEST BENCH REQUIREMENTS 100H.: (1.4...2.6) cm3/: 0.8 100H.: (1.2) Calibrating-oil inlet temp. °C Dispersion : 38...42 Overflow valve (B) Setting of injection pump with : 1 417 413 025 externally-mounted governor Inlet press., bar : 1.50 SLEEVE TRAVELS 1st speed 1/min: 250 Sleeve travel mm: 1.50...1.70
2nd speed 1/min: 350
Sleeve travel mm: 2.20...2.70
3rd speed 1/min: 500
Sleeve travel mm: 3.00...3.40 Calibrating nozzle-holder : 1 688 901 019 assembly Opening : 207...210 pressure, bar 4th speed 1/min: 1000 Sleeve travel mm: 8.00...8.20 Perforated-plate diameter mm : 0.8 5th speed 1/min: 1060 Sleeve travel mm: 8.90...9.20 Test inj. tubing : 1 680 750 067 SLEEVE POSITION Control-lever position Degree: -1 1/min: 1000 Outside diameter x Wall thickness Speed x Length mm Cont.-rod travelmm: 15.20...17.80 : 6.00x1.50x1000 FULL-LOAD DELIV. AT FULL-LOAD STOP (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. 1st version Speed 1/min: 900 per values Charge press. hPa: 700 Del.quantity cm3/: 215.0...217.0 1000H.: (212.0...220.0) START OF DELIVERY Test pressure, bar: 25...27

Dispersion cm3/ : 5.00 1000H.: (9.00) HIGHEST RATED SPEED 1st version Control-lever position degrees: 50...58 Testing: 1st c-rod trav.mm : 11.90 Speed 1/min: 990...1000 2nd c-rod trav.mm : 4.00 Speed 1/min: 1055...1085 4th speed 1/min: 1200 C-rod trav.mm: 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 15...23 Testing: Speed 1/min: 100 C-rod trav.mm min: 7.00 Speed 1/min: 250 : 5.50...5.70 C-rod trav.mm CONSTANT REGULATION Speed 1/min: 250...470 compensator (LDA\_ADA\_ALDA) 1st version Setting 1/min : 500 hPa : 700 Speed Pressure Contr.-rod trav.mm: 12.90...13.00 Measurement Speed 1/min: 500 1st pressure hPa : -C-rod trav.mm : 11.70...11.90 2nd pressure hPa : 330 C-rod trav.mm : 12.00...12.10 3rd pressure hPa : 510 : 12.60...12.80 C-rod trav.mm SWITCH-OVER POINT Speed 1/min : 170 (190) FUEL-DELIVERY CHARACTERISTICS 1st version Charge press. hPa : 700 1/min : 500 Speed Del.quantity cm3/: 200.0...206.0

1000H.: (197.0...209.0)

L10

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 11.90 Speed 1/min: 990...1000

STARTING FUEL DELIVERY

Speed 1/min: 100 Del.quantity cm3/: 140.0...170.0 1000H.: (136.0...174.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,7 A 9
Edition : 02.12.86
Superceeded : 12.85
Calibrating oil : ISO-4113

Combination no. : 0 402 046 773

Injection pump

Pump designation : PES6P110A820LS3131

EP type number : 0 412 016 715

Governor

Governor design. : RQ300/1100PA800-Governor no. : 0 421 801 347

Customer-spec. information

Customer : DAIMLER-BENZ

: 0M427H Engine

1st version kW : 177.0 Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. OC

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Over flow

quantity min. 1/h: 100...120

Calibrating nozzle-holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values \_\_\_\_

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40 2nd c-rod trav.mm : 4.00 : (4.25...4.45) Contr.-rod trav.mm: 9.00...12.00 Speed 1/min: 1185...1215 th speed 1/min: 1300 4th speed Cam sequence : 6-2-4-1-5-3 C-rod trav.mm : 0.00...1.50 LOWEST RATED SPEED I Control-lever SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) position degrees: 76...82 Setting point w/out aux. spring Speed 1/min: 300 Contr.-rod trav.mm: 7.3 SD mark cyl. no. : 6 BASIC SETTING Testing: Speed 1/min : 100 C-rod tray.mm min : 8.80 1st speed 1/mi: 1100 Speed 1/min: 300 C-rod trav.mm: 7.30 C-rod trav.mm: 2.00 Speed 1/min: 380...420 Contr.-rod trav.mm: 11.00...11.10 Del.quantity cm3/: 13.9...14.1 100H.: (13.6...14.3) FUEL-DELIVERY CHARACTERISTICS 1/min : 600 Speed Del.quantity cm3/: 116.0...119.0 1000H.: (113.0...122.0) Dispersion cm3/:0.4100H.: (0.8) cm3/: -Dispersion 1000H.: (9.00) 2nd speed 1/min: 300 Contr.-rod trav. m: 7.20...7.40 Del.quantity cm3/: 1.4...2.0 ROTATIONAL-SPEED LIMITATION 100H.: (1.1..2.3) cm3/: 0.4 1st version 1mm control-rod travel less than Dispersion 100H.: (0.8) full-load trav.mm: 10.00 SLEEVE POSITION 1/min : 1140...1155 Speed Control-lever position Degree: -1 1/min: 600 STARTING FUEL DELIVERY Speed Cont.-rod travelmm: 13.00...14.00 Speed 1/min : 100 Del.quantity cm3/: 130.0...150.0 1000H.: (126.0...154.0) FULL-LOAD DELIV. AT FULL-LOAD STOP 1st version Speed 1/min: 1100 Remarks: Del.quantity cm3/: 139.0...141.0 **APPLICATION** 1000H.: (136.5...143.5) 0mn ibus cm3/: 4.00 1000H.: (8.00) Dispersion HIGHEST RATED SPEED 1st version Control-lever position degrees: 99...105 Setting point: Speed 1/min : 600 Contr.-rod trav.mm: 13.5 Testing: 1st c-rod trav.mm : 10.00

Speed 1/min: 1140...1155

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0\_50 (0\_75) Test sheet : KHD 9.6 T : 20.8.87 Edition Superceeded Superceeded : 9.86 Calibrating oil : ISO-4113 SD mark cyl. no. : 1 BASIC SETTING Combination no. : 0 402 046 774 1st speed 1/mi: 1150 Injection pump Pump designation : PES6P110A720RS3104 Contr.-rod trav.mm: 13,40...13,50 EP type number : 0 412 016 712 Del.quantity cm3/: 15,1...15,3 Governor Governor design. : RQV300...1150PA801 Governer no. : 0 421 813 537 100H.: (14,8...15,6) cm3/: 0,40 Customer-spec. information Dispersion Customer : KHD 100H.: (0,75) Engine : BF6L513R 2nd speed 1/min: 300 Contr.-rod trav. m: 7,90...8,10 Del.quantity cm3/: 1,6...2,2 100H.: (1,3...2,4) Dispersion cm3/: 0,40 100H.: (0,75) 1st version kW : 177.0 1/min: 2300 Speed TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. °C : 38...42 (B) Setting of injection pump with externally-mounted governor Overflow valve : 1 417 413 025 SLEEVE TRAVELS 1st speed 1/min: 300
Sleeve travel mm: 1,30...1,40
2nd speed 1/min: 390
Sleeve travel mm: 2,40...2,70 Inlet press., bar : 1.50 Calibrating nozzle-holder assembly : 0 681 343 009 3rd speed 1/min: 460 Sleeve travel mm: 2,80...3,20 4th speed 1/min: 1190 Opening pressure, bar : 172...175 Sleeve travel mm: 8,40...8,50 5th speed 1/min: 1290 Sleeve travel mm: 9,40...9,70 Test inj. tubing : 1 680 750 015 SLEEVE POSITION Control-lever position Outside diameter x Wall thickness Degree: -1 17min: 1190 : 6,00x1,50x600 x Length mm Cont.-rod travelmm: 15,20...17,80 (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. FULL-LOAD DELIV. AT FULL-LOAD STOP per values \_\_\_\_ 1st version Speed 1/min: 1150 START OF DELIVERY Charge press. hPa: 900 Del.quantity cm3/: 151.0...153.0 1000H.: (148.0...156.0) : 2,80...2,90 Prestroke mm : (2.75...2.95) Contr.-rod trav.mm: 9,00...12,00 Dispersion cm3/ : 4,0 1000H.: (7,5) Cam sequence : 1-5-3-6-2-4

L13

HIGHEST RATED SPEED 1st version Control-lever position degrees: 51...59 Testing: 1st c-rod trav.mm : 12,40 1/min : 1190...1200 Speed 2nd c-rod trav.mm : 4.00 Speed 1/min : 1310...1340 1/min: 1400 4th speed C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 16...24 Testing: Speed 1/min : 100 C-rod trav.mm min : 9,40 Speed 1/min : 300 C-rod trav.mm : 7,90...8,10 CONSTANT REGULATION Speed 1/min : 320...480 compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 450 Speed hPa : 900 Pressure Contr.-rod trav.mm: 13,60...13,70 Measurement 1/min : 450 Speed 1st pressure hPa : -C-rod trav.mm : 12,50...12,70 2nd pressure hPa : 420 C-rod trav.mm : 13,20...13,30 3rd pressure hPa : 360 C-rod trav.mm : 12,70...12,90 SWITCH-OVER POINT 1/min : 250 (270) Speed FUEL-DELIVERY CHARACTERISTICS

1/min : 450 Del.quantity cm3/: 123.0...125.0 1000H.: (120,0...128.0)

ROTATIONAL-SPEED LIMITATION

full-load trav.mm: 12,40

1mm control-rod travel less than

Speed

L14

1st version

1/min: 1190...1200 Speed STARTING FUEL DELIVERY 1/min: 100 Speed Del.quantity cm3/: 170,0...200,0 1000H.: (166\_0...204\_0) Remarks: Check electrically unlatched starting fuel delivery (EES) With 24 volt.

Prestroke mm : 3,80...3,90 : (3,75...3,95)
Contr.-rod trav.mm: 9,00...12,00
Cam sequence : 6-2-4-1-5-3 BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet Edition Superceeded : MAN 11,9 H : 21.8.87 : 9.86 SD ang. spacing  $^{6}$ CS: 0-60-120-180-240-300 Tolerance + -  $^{6}$ : 0,50 (0,75) Calibrating oil : ISO-4113 Combination no. : 0 402 046 777 SD mark cyl. no. : 6 Injection pump Pump designation : PES6P120A720LS3167 BASIC SETTING EP type number : 0 412 026 720 Governor 1st speed 1/mi: 700 Governor design. : RQ750PA661-4 Governer no. : 0 421 801 361 Contr.-rod trav.mm: 13,70...13,80 Del.quantity cm3/: 23,1...23,3 Customer-spec. information Customer 100H.: (22,8...23,6) Engine : D2866TE cm3/:0.50Dispersion 1st version kW : 190.0 Speed 1/min: 1500 100H.: (0,90) 2nd speed 1/min: 300 Contr.-rod trav. m: 7,50...7,70 Del.quantity cm3/: 2,4...3,0 TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. °C 100H.: (2.1...3,3) cm3/: 0.80 100H.: (1,20) : 38...42 Dispersion Overflow valve : 1 417 413 025 FULL-LOAD DELIV. AT FULL-LOAD STOP Inlet press., bar : 1.50 1st version Speed 1/min: 700
Del.quantity cm3/: 231.0...233.0
1000H.: (228.0...236.0)
Dispersion cm3/: 5.00 Calibrating nozzle-holder : 1 688 901 019 assembly Opening pressure, bar : 207...210 1000H.: (9,00) Perforated-plate HIGHEST RATED SPEED diameter mm : 0,8 Testing: 1st c-rod trav.mm : 12,70 Speed 1/min: 750...755 Test inj. tubing : 1 680 750 075 2nd c-rod trav.mm: 4,00 Outside diameter Speed 1/min: 802...815 x Wall thickness 4th speed 1/min: 950 x Length mm : 8,00x2,50x1000 C-rod trav.mm : 0,00...1,00 (A) Injection pump setting values ROTATIONAL-SPEED LIMITATION Insp. values in parentheses Set constant delivery quant. 1st version per values \_\_\_\_ 1mm control-rod travel less than full-load trav.mm: 12,70 Speed 1/min: 750...755 START OF DELIVERY Test pressure, bar: 25...27

## STARTING FUEL DELIVERY

Remarks:

: MAN-NR. 2-7775

APPLICATION Generator set

```
: 1- 4- 2- 6- 3- 5
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                     Cam sequence
Note inst. in remarks column
                                                     SD ang. spacing ^{0}CS: 0-60-120-180-240-300 Tolerance + - ^{0}: 0.50 (0.75)
                   : ROL 12.2 I
: 09.03.87
Test sheet
Edition
Superceeded
Calibrating oil
                 : ISO-4113
                                                     SD mark cyl. no. : 1
Combination no.
                   : 0 402 046 778
                                                     BASIC SETTING
Injection pump
                                                     1st speed
                                                                   1/mi: 850
Pump designation : PES6P120A320RS3170-1
EP type number
                  : 0 412 026 726
                                                     Contr.-rod trav.mm: 13.10...13.20
Governor
Governor design. : R@900PA826
                                                    Del.guantity cm3/: 21.9...22.1
Governer no.
                   : 0 421 801 365
                                                                   100H.: (21.6...22.4)
Customer-spec. information
                                                                  cm3/:0.5
Customer
                   : ROLLS ROYCE
                                                     Dispersion
                   : EAGLE LE
                                                                   100H.: (0.9)
Engine
TEST BENCH REQUIREMENTS
                                                                   1/min: 250.0
                                                     2nd speed
                                                    Contr.-rod trav. m: 5.9...6.1
Calibrating-oil inlet temp. OC
                                                    Del.quantity cm3/: 1.7...2.3
                                                                   100H.: (1.4...2.6)
                   : 38...42
                                                                  cm3/: 0.8
100H.: (1.2)
                                                    Dispersion
Overflow valve
                    : 1 417 413 025
                                                    FULL-LOAD DELIV. AT FULL-LOAD STOP
Inlet press., bar : 1.50
                                                    1st version
                                                                  1/min: 850
Calibrating nozzle-holder
                                                    Speed
                                                    Del.quantity cm3/: 219.0...221.0
               : 1 688 901 019
 assembly
                                                                 1000H.: (216.0...224.0)
cm3/ : 5.00
1000H.: (9.00)
Opening
                                                    Dispersion
                   : 207...210
 pressure, bar
                                                    HIGHEST RATED SPEED
Perforated-plate
                   : 0,8
 diameter mm
                                                    Testing:
                                                    1st c-rod trav.mm : 12.10
                   : 1 680 750 067
                                                                1/min : 900...905
Test inj. tubing
                                                       Speed
                                                    2nd c-rod trav.mm : 4.00
                                                                 1/min: 936...951
Outside diameter
                                                       Speed
x Wall thickness
                                                                 1/min: 1000
                                                    4th speed
                                                       C-rod trav.mm : 0.00...1.00
                   : 6.00X1.50X1000
x Length mm
                                                    SWITCH-OVER POINT
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                    Speed
                                                                 1/min : 850
    per values ____
                                                    ROTATIONAL-SPEED LIMITATION
START OF DELIVERY
Test pressure, bar: 25...27
                                                    1st version
                                                    1mm control-rod travel less than
                   : 3.50...3.60
Prestroke mm
                   : (3.45...3.65)
                                                     full-load trav.mm: 12.10
Contr.-rod trav.mm: 9.00...12.00
                                                                1/min: 900...905
                                                    Speed
L17
```

## STARTING FUEL DELIVERY

Speed 1/min: 100 Del.quantity cm3/: 140.0...160.0 1000H.: (136.0...164.0)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                       : 1-5-3-6-2-4
                                                    Cam sequence
Note inst. in remarks column
Test sheet
                                                    SD ang. spacing ^{0}CS: 0-60-120-180-240-300 Tolerance + - ^{0}: 0.50 (0.75)
                   : SSC 10.5 D
: 17.12.86
Edition
Superceeded
Calibrating oil : ISO-4113
                                                    SD mark cyl. no. : 1
Combination no.
                   : 0 402 046 780
                                                    BASIC SETTING
Injection pump
                                                                   1/mi: 750
                                                    1st speed
Pump designation : PES6P130A320LS3180
                                                    Contr.-rod trav.mm: 13.90...14.00
EP type number
                   : 0 412 036 703
Governor
Governor design. : RQV300...750PA614
                                                    Del.quantity cm3/: 45.2...45.5
Governer no.
                  : 0 421 813 316
                                                                  100H.: (45.8...46.8)
Customer-spec. information
Customer
                                                    Dispersion
                                                                  cm3/:0.6
                   : SSCM
Engine
                   : UD25-L6
                                                                  100H.: (1.0)
                                                    2nd speed 1/min: 300.0
Contr.-rod trav. m: 4.5...4.7
1st version kW : 368.0
Speed
             1/min: 1500
                                                    Del.quantity cm3/: 1.7...2.3
                                                                  100H.: (1.3...2.7)
TEST BENCH REQUIREMENTS
                                                                  cm3/: 1.0
                                                    Dispersion
Calibrating-oil inlet temp. OC
                                                                  100H.: (1.4)
                   : 38...42
                                                     (B) Setting of injection pump with
                                                         externally-mounted governor
Overflow valve
                   : 1 417 413 025
                                                    SLEEVE TRAVELS
                                                    1st speed 1/min: 300
Inlet press, bar : 1.50
                                                      Sleeve travel mm: 1.30...1.50
                                                    2nd speed 1/min: 600
Calibrating nozzle-holder
                                                    Sleeve travel mm: 5.30...5.80
3rd speed 1/min: 750
Sleeve travel mm: 7.80...8.30
                 : 0 681 443 022
 assembly
Opening
pressure, bar : 172...175
                                                    SLEEVE POSITION
                                                    Control-lever position
Test inj. tubing : 1 680 750 060
                                                                 Degree: -1
                                                                  17min: 780
                                                    Speed
                                                    Cont.-rod travelmm: 15.20...17.80
Outside diameter
x Wall thickness
                                                    FULL-LOAD DELIV. AT FULL-LOAD STOP
                : 8.00x2.00x1000
x Length mm
(A) Injection pump setting values
                                                    1st version
                                                                  1/min: 750
    Insp. values in parentheses
                                                    Speed
                                                    Del.quantity cm3/: 452.0...455.0
    Set constant delivery quant.
                                                                 1000H.: (458.5...468.5)
cm3/: 6.00
    per values ____
                                                    Dispersion
                                                                 1000H.: (10.00)
START OF DELIVERY
Test pressure, bar: 25...27
                                                    HIGHEST RATED SPEED
                   : 2.80...2.90
Prestroke mm
                                                    1st version
                   : (2.75...2.95)
                                                    Control-lever
Contr.-rod trav.mm: 9.00...12.00
                                                     position degrees: 62...70
L19
```

Testing: 1st c-rod trav.mm : 12.90 Speed 1/min: 790...800
2nd c-rod trav.mm: 4.00
Speed 1/min: 850...880
4th speed 1/min: 1000 C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 7...15 Testing: Speed 1/min: 100 C-rod trav.mm min: 7.10 Speed 1/min: 300 C-rod trav.mm: 5.20...5.40 CONSTANT REGULATION Speed 1/min : 325...435 SWITCH-OVER POINT 1/min : 220 (240) Speed ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 12.90 1/min : 790...800 Speed STARTING FUEL DELIVERY Del.quantity cm3/: 390.0...420.0 1000H.: (386.0...424.0) Remarks: **APPLICATION** 

Navy

```
Cam sequence : 1-5- 3- 6- 2- 4
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                        SD ang. spacing ^{\circ} CS: 0-60-120-180-240-300 Tolerance + - ^{\circ} : 0.50 (0.75)
Test sheet
Edition
Superceeded
                    : UNI 9.5 B
: 24.8.87
                   : 10.86
Calibrating oil : ISO-4113
                                                        BASIC SETTING
Combination no.
                    : 0 402 046 782
                                                         1st speed
                                                                        1/mi: 1150
Injection pump
                                                         Contr.-rod trav.mm: 11.00...11.10
Pump designation : PES6P110A720RS3140
EP type number : 0 412 016 716
                                                         Del.quantity cm3/ : 13.8...14.1
Governor
Governor design. : RQV275...1150PA841
                                                                        100Ha: (13.5...14.3)
Governer no.
                  : 0 421 813 586
                                                                       cm3/:0.40
                                                        Dispersion
Customer-spec. information
                                                                        100H.: (0.75)
Customer
                    : IVECO-UNIC
Engine
                     : 8460.21.002
                                                                        1/min: 275
                                                        2nd speed
                                                        Contr.-rod trav. m: 6.80...7.00
                                                        Del.quantity cm3/: 1.7...2.2
1st version kW : 177.0
                                                                        100H.: (1.4...2.4)
               1/min: 2300
Speed
                                                        Dispersion
                                                                        cm3/:0.45
TEST BENCH REQUIREMENTS
                                                                        100H.: (0.75)
Calibrating-oil inlet temp. °C
                                                         (B) Setting of injection pump with externally-mounted governor
                     : 38...42
Overflow valve
                                                        SLEEVE TRAVELS
                     : 1 417 413 025
                                                         1st speed 1/min: 250
                                                           Sleeve travel mm: 1.00...1.20
                                                        2nd speed 1/min: 400
Sleeve travel mm: 2.70...3.00
3rd speed 1/min: 850
Inlet press., bar : 1.50
Calibrating nozzle-holder
                   : 0 681 343 009
                                                           Sleeve travel mm: 5.00...5.20
 assembly
                                                         4th speed 1/min: 1150
Opening
                                                          Sleeve travel mm: 7.30...7.50
pressure, bar : 172...175
                                                        SLEEVE POSITION
                                                        Control-lever position
Test inj. tubing : 1 680 750 015
                                                                      Degree: -1
1/min: 1260
                                                        Speed
Outside diameter
                                                        Cont.-rod travelmm: 15.20...17.80
x Wall thickness
                                                        FULL-LOAD DELIV. AT FULL-LOAD STOP
                   : 6.00x1.50x600
x Length mm
                                                        1st version
(A) Injection pump setting values
                                                        Speed 1/min: 1150
Charge press. hPa: 700
Del.quantity cm3/: 138.0...141.0
1000H.: (135.5...143.5)
Dispersion cm3/: 4.00
1000H.: (7.50)
    Insp. values in parentheses
Set constant delivery quant.
    per values
START OF DELIVERY
Test pressure, bar: 25...27
                     : 3.20...3.30
Prestroke mm
                                                        HIGHEST RATED SPEED
                     : (3,15...3.35)
                                                        1st version
Contr.-rod trav.mm: 9.00...12.00
```

L21

Control-lever position degrees: 60...68 Testing: 1st c-rod trav.mm : 10.00 Speed 1/min: 1190...1200 2nd c-rod trav.mm : 4.00 1/min: 1275...1305 Speed 4th speed 1/min: 1400 C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 11...19 Testing: 1/min : 100 Speed C-rod trav.mm min: 8.40 Speed 1/min : 275 C-rod trav.mm : 6.80...7.00 CONSTANT REGULATION 1/min : 275...520 Speed compensator (LDA,ADA,ALDA) 1st version Setting 1/min : 500 hPa : 700 Speed Pressure Contr.-rod trav.mm: 11.00...11.10 Measurement Speed 1/min : 500 1st pressure hPa : -C-rod trav.mm : 10.50...10.60 2nd pressure hPa : 290 C-rod trav.mm : 10.70...10.80 SWITCH-OVER POINT Speed 1/min : 210 (230) FUEL-DELIVERY CHARACTERISTICS Speed 1/min : 500 Del.quantity cm3/: 121.0...124.0 1000H.: (118.5...126.5) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 10.00 Speed 1/min : 1190...1200

Speed 1/min: 100 Del.quantity cm3/: 120.0...140.0 1000H.: (116.0...144.0)

APPLICATION Omnibus

STARTING FUEL DELIVERY

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing  $^{\circ}$  CS: 0-60-120-180-240-300 Tolerance + -  $^{\circ}$  : 0.50 (0.75) : KHD 9,6 V : 03.04.87 Test sheet Edition Superceeded SD mark cyl. no. : 1 Calibrating oil : ISO-4113 BASIC SETTING Combination no. : 0 402 046 787 1st speed 1/mi: 1000 Injection pump Pump designation : PES6P110A720RS3104 Contr.-rod trav.mm: 13.20...13.30 EP type number : 0 412 016 712 Del.quantity cm3/: 13.9...14.1 Governor Governor design. : RQV375...1000PA862 Governer no. : 0 421 813 625 100H.: (13.6...14.4) Customer-spec. information Dispersion cm3/:0.4Customer : KHD 100H.: (0.7) Engine : BF6L513R 2nd speed 1/min: 375.0 Del.quantity cm3/: 1.6...2.2 100H.: (1.3...2.4) 1st version kW : 156.0 1/min: 2000 Speed cm3/: 0.4 100H.: (0.7) Dispersion TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. °C (B) Setting of injection pump with : 38...42 externally-mounted governor Overflow valve SLEEVE TRAVELS : 1 417 413 025 1st speed 1/min: 375 Sleeve travel mm: 0.90...1.10 Inlet press., bar : 1.50 2nd speed 1/min: 410 Sleeve travel mm: 1.60...1.90

3rd speed 1/min: 550

Sleeve travel mm: 2.80...3.10

4th speed 1/min: 1050 Calibrating nozzle-holder : 0 681 343 009 assembly Sleeve travel mm: 8.50...8.60 Opening pressure, bar : 172...175 5th speed 1/min: 1110 Sleeve travel mm: 9.50...9.80 Test inj. tubing : 1 680 750 015 SLEEVE POSITION Control-lever position Degree: -1 1/min: 1050 Outside diameter x Wall thickness Speed x Length am : 6.00x1.50x600 Cont.~rod travelmm: 15.20...17.80 FULL-LOAD DELIV. AT FULL-LOAD STOP (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. 1st version per values \_\_\_\_ 1/min: 1000 Speed Del.quantity cm3/: 139.0...141.0 1000H.: (136.0...144.0) START OF DELIVERY Dispersion cm3/ : 4.00 : 2.80...2.90 1000H.: (7.50) Prestroke mm : (2.75...2.95) Contr.-rod trav.mm: 9.00...12.00 HIGHEST RATED SPEED Cam sequence : 1-5-3-6-2-4 1st version L23

Control-lever position degrees: 51...59 Testing: 1st c-rod trav.mm : 12.20 Speed 1/min: 1040...1050 2nd c-rod trav.mm : 4.00 1/min: 1090...1120 Speed 4th speed 1/min: 1250 C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: ? Testing: Speed 1/min : 100 C-rod trav.mm min : 1.50 Speed 1/min : 375 C-rod trav.mm CONSTANT REGULATION 1/min: 375...480 Speed TORQUE CONTROL Dimension a mm : 0.20 Torque-control curve - 1st version 1st speed 1/min : 1000 C-rod trav.mm : 13.20...13.30 1/min : 650 2nd speed C-rod trav.mm : 13.40...13.50 3rd speed 1/min: 825 C-rod trav.mm : 13.30...13.40 SWITCH-OVER POINT Speed 1/min : 310 (330) FUEL-DELIVERY CHARACTERISTICS 1st version Charge press, hPa : 900 1/min : 650 Speed Del.quantity cm3/: 146.0...150.0 1000H.: (143.0...153.0) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 12.20 1/min : 1040...1050 Speed STARTING FUEL DELIVERY

Del.quantity cm3/: 170.0...200.0 1000H.: (166.0...204.0)

Remarks:

Speed

1/min : 100

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet Edition Superceeded : RVI 14,9 H : 10.08.87

Calibrating oil : ISO-4113

Combination no. : 0 402 048 705

Injection pump

Pump designation : PES8P120A320RS3199 EP type number : 0 412 028 705

Governor

Governor design. : RQV275...1050PA665

Governer no. : 0 421 813 370

Customer-spec. information Customer : RVI

: MIVRO83530 Engine

1st version kW : 320.0 Speed 1/min: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Calibrating nozzle-holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Perforated-plate

diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values

START OF DELIVERY

Test pressure, bar: 25...27

Dispersion cm3/ : 5.00 : 3.50...3.60 : (3.45...3.65) Prestroke mm 1000H.: (9.00) Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 8- 4- 2- 7- 3- 6-HIGHEST RATED SPEED 1st version Control-lever position degrees: 62...70 SD ang. spacing CS: 0-45-90-135-180-225-Testing: 1st c-rod trav.mm : 10.40 Speed 1/min : 1115...1135 270-315 Tolerance + - 0 : 0.50 (0.75) 2nd c-rod trav.mm : 4.00 Speed 1/min: 1220...1250 4th speed 1/min: 1350 BASIC SETTING 1st speed 1/mi: 1050 C-rod trav.mm : 0.00...1.00 Contr.-rod trav.mm: 11.40...11.50 LOWEST RATED SPEED I Control-lever Del.quantity cm3/: 20.2...20.4 position degrees: 7...15 100H.: (19.9...20.7) Testing: 1/min : 200 Speed C-rod trav.mm min : 5.60 Dispersion cm3/:0.5Speed 1/min : 275 100H.: (0.9) C-rod trav.mm : 3.80...4.00 2nd speed 1/min: 275.0 Contr.-red trav. m: 3.8...4.00 Del.quantity cm3/: 1.7...2.3 100H.: (1.4...2.6) CONSTANT REGULATION Speed 1/min: 280...405 compensator (LDA, ADA, ALDA) cm3/: 0.8 100H.: (1.2) Dispersion 1st version Setting (B) Setting of injection pump with 1/min : 500 hPa : 700 externally-mounted governor Speed Pressure SLEEVE TRAVELS Contr.-rod trav.mm: 11.40...11.50 1st speed 1/min: 275 Sleeve travel mm: 1.40...1.60 Measurement 2nd speed 1/min: 450 1/min : 500 Speed Sleeve travel mm: 3.40...3.80 3rd speca 1/min: 800 1st pressure hPa : Sleeve travel mm: 5.60...6.00
4th speed 1/min: 1050
Sleeve travel mm: 7.50...7.70 C-rod trav.mm : 8.70...8.90 2nd pressure hPa : 420 C-rod trav.mm : 10.60...10.70 3rd pressure hPa : 360 SLEEVE POSITION C-rod trav.mm : 9.40...9.60 Control-lever position SWITCH-OVER POINT Degree: -1 17min: 1140 Speed Cont.-rod travelmm: 15.20...17.80 Speed 1/min : 195 (215) FULL-LOAD DELIV. AT FULL-LOAD STOP FUEL-DELIVERY CHARACTERISTICS 1st version Speed 1/min: 1050 1st version Charge press. hPa: 700 Charge press. hPa: 700 Del.quantity cm3/: 202.0...204.0 1000H.: (199.0...207.0) Speed 1/min: 650 Dei.quantity cm3/: 187.0...193.0 1000H.: (184.0...196.0)

```
Charge press. hPa : -
Speed 1/min : 5
Speed 1/min: 500
Del.quantity cm3/: 110.0...112.0
1000H.: (107.0...115.0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 10.40
Speed 1/min: 1115...1135
Speed
STARTING FUEL DELIVERY
                 1/min : 100
Speed
Del.quantity cm3/: 170.0...190.0
1000H.: (166.0...194.0)
LOW IDLE
Speed 1/min: 275
Contr.-rod trav.mm: 3.80...4.00
Del.quantity cm3/: 17.0...23.0
1000H.: (14.0...26.0)
Dispersion cm3/: 8.00
1000H.: (12.00)
Start-of-delivery mark 13° cam angle
after start of delivery cyl. 1.
```

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.00...3.10 : (2.95...3.15) Prestroke mm Contr.-rod trav.mm: 9.00...12.00 Note inst. in remarks column Cam sequence : 1- 3- 5- 4-Test sheet : MB 9.5 A8 : 09.03.87 Edition Superceeded SD ang. spacing CS: 0-72-144-216-288 Tolerance + - : 0.50 (0.75) Calibrating oil : ISO-4113 : 0 402 075 001 Combination no. SD mark cyl. no. : 5 Injection pump Pump designation : PES5P110A820LS434 BASIC SETTING EP type number : 0 412 015 020 1/mi: 730 Governor 1st speed Governor design. : RSV350...750P0A487-2 Governer no. : 0 421 833 263 Contr.-rod trav.mm: 13.10...13.20 Del.quantity cm3/: 13.5...13.7 Customer-spec. information : DAIMLER-BENZ Customer 100H.: (13.2...14.0) : 0M409 Engine cm3/:0.4Dispersion 1st version kW : 101.0 1/min: 1500 100H.: (0.8) Speed 2nd speed 1/min: 350.0 Contr.-rod trav. m: 7.7...7.9 Del.quantity cm3/: 1.1...1.7 100H.: (0.8...1.9) Dispersion cm3/: 0.4 100H.: (0.7) TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 SLEEVE POSITION Control-lever position Inlet press., bar : 1.50 Degree: -3 17min: 800 Overflow Speed Cont.-rod travelmm: 0.30...0.70 quantity min. 1/h: 100...120 Calibrating nozzle-holder FULL-LOAD DELIV. AT FULL-LOAD STOP : 0 681 343 009 assembly 1st version Speed 1/min: 730 Opening Del.quantity cm3/: 135.0...137.0 1000H.: (132.0...140.0) Dispersion cm3/: 4.00 pressure, bar : 172...175 Test inj. tubing : 1 680 750 015 1000H.: (8.00) HIGHEST RATED SPEED Outside diameter x Wall thickness 1st version : 6.00x1.50x600 Control-lever x Length mm position degrees: 30...38 (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. Testing: 1st c-rod trav.mm : 12.10 Speed 1/min : 750...755 2nd c-rod trav.mm : 4.00 per values Speed 1/min: 785...795 th speed 1/min: 850 START OF DELIVERY 4th speed Test pressure, bar: 25...27 C-rod trav.mm : 0.30...1.40

1.28

SET IDLE AUXILIARY SPRING Contr.-rod trav.mm: 2.00

ROTATIONAL-SPEED LIMITATION

1st version 1mm control-rod travel less than

full-load trav.mm: 12.10 Speed 1/min: 750...755

STARTING FUEL DELIVERY

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                       : 3.20...3.30
                                                    Prestroke mm
                                                                       : (3.15...3.35)
                                                    Contr.-rod trav.mm: 9.00...12.00
Note inst. in remarks column
                                                    Cam seguence : 6-2-4-1-5-3
Test sheet
                   : MB 11.4 L18 : 09.03.87
Edition
Superceeded
                                                    SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Calibrating oil : ISO-4113
                   : 0 402 076 052
Combination no.
                                                    SD mark cyl. no. : 6
Injection pump
Pump designation : PES6P110A820LS442
                                                    BASIC SETTING
EP type number : 0 412 016 060
                                                                  1/mi: 700
                                                    1st speed
Governor
Governor design. : RSV350...750PDA487-3
                                                    Contr.-rod trav.mm: 12.10...12.20
Governer no. : 0 421 833 264
Customer-spec. information
                                                    Del.quantity cm3/: 11.9...12.1
                   : DAIMLER-BENZ
Customer
                                                                  100H.: (11.6...12.4)
                   : OM 407
Engine
                                                                  cm3/:0.4
                                                    Dispersion
1st version kW : 121.0
                                                                  100H.: (0.8)
             1/min: 1500
Speed
TEST BENCH REQUIREMENTS
                                                                  1/min: 350.0
                                                    2nd speed
                                                    Contr.-rod trav. m: 8.1...8.3
Calibrating-oil inlet temp. °C : 38...42
                                                    Del.quantity cm3/ : 1.3...2.1
                                                                  100H.: (1.0...2.3)
cm3/: 0.4
100H.: (1.2)
                                                    Dispersion
Overflow valve
                   : 1 417 413 025
                                                    SLEEVE POSITION
                                                    Control-lever position
Inlet press., bar : 1.50
                                                                 Degree: -3
                                                                 17min: 800
Overflow
                                                    Cont.-rod travelmm: 0.30...0.70
 quantity min. 1/h: 100...120
                                                    FULL-LOAD DELIV. AT FULL-LOAD STOP
Calibrating nozzle-holder
assembly : 0 681 343 009
                                                    1st version
                                                                  1/min: 700
                                                    Speed
Opening
                                                    Del.quantity cm3/: 119.0...121.0
pressure, bar : 172...175
                                                                1009H:: (116.0...124.0)
cm3/: 4.00
1000H:: (8.00)
                                                    Dispersion
Test inj. tubing : 1 680 750 015
                                                    HIGHEST RATED SPEED
Outside diameter
x Wall thickness
                                                    1st version
x Length mm
                   : 6.00x1.50x600
                                                    Control-lever
                                                     position degrees: 31...39
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                    Testing:
                                                    1st c-rod trav.mm : 11.10
Speed 1/min : 750...755
2nd c-rod trav.mm : 4.00
    per values
                                                     Speed 1/min: 785...795
START OF DELIVERY
                                                    4th speed 1/min: 850
Test pressure, bar: 25...27
                                                      C-rod trav.mm : 0.30...1.40
```

MO3

SET IDLE AUXILIARY SPRING Contr.-rod trav.mm: 2.00

ROTATIONAL-SPEED LIMITATION

1st version 1mm control-rod travel less than

full-load trav.mm: 11.10 Speed 1/min: 750...755

STARTING FUEL DELIVERY

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                        : 3.20...3.30
                                                     Prestroke mm
                                                     : (3.15...3.35)
Contr.-rod trav.mm: 9.00...12.00
Note inst. in remarks column
Test sheet
                                                     Cam sequence : 6- 2- 4- 1- 5- 3
                   : MB 11,4 L15
Edition
                    : 24.8.87
Superceeded
                    : 12.85
                   : ISO-4113
Calibrating oil
                                                     SD ang. spacing ^{\circ} CS: 0-60-120-180-240-300 Tolerance + - ^{\circ} : 0.50 (0.75)
Combination no.
                   : 0 402 076 055
Injection pump
                                                     SD mark cyl. no. : 6
                   : PES6P110A820LS442-1
Pump designation
                                                     BASIC SETTING
EP type number
                   : 0 412 016 063
Governor
                   : RSV300...1100P0A485
                                                                    1/mi: 1100
Governor design.
                                                     1st speed
                      -2
                                                     Contr.-rod trav.mm: 9.50...9.60
                   : 0 421 833 207
Governer no.
                                                     Del.quantity cm3/ : 9.4...9.6
Customer-spec. information
Customer
                   : DAIMLER-BENZ
                                                                   100H.: (9.1...9.8)
                    : OM 407
Engine
                                                                   cm3/:0.4
                                                     Dispersion
1st version kW : 122.0
              1/min: 2200
Speed
                                                                   100H.: (0.8)
                                                     2nd speed 1/min: 300
Contr.-rod trav. m: 7.70...7.90
Del.quantity cm3/: 1.4...2.0
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. OC
                                                                   100H.: (1.1...2.2) cm3/: 0.4
                    : 38...42
                                                     Dispersion
                                                                   100H.: (0.7)
Overflow valve
                    : 1 417 413 025
                                                     SLEEVE POSITION
                                                     Control-lever position
Inlet press., bar: 1.50
                                                                  Degree: -3
                                                                   17min: 800
Overflow
                                                     Speed
                                                     Cont.-rod travelmm: 0.30...0.70
 quantity min. 1/h: 100...120
                                                     FULL-LOAD DELIV. AT FULL-LOAD STOP
Calibrating nozzle-holder
             : 0 681 343 009
 assembly
                                                     1st version
Opening
                                                     Speed
                                                                   1/min: 1100
                                                     Del.quantity cm3/: 94.0...96.0
 pressure, bar : 172...175
                                                                  1000H.: (91.5...98.5) cm3/ : 4.00
                                                     Dispersion
                                                                  1000H.: (8.00)
Test inj. tubing : 1 680 750 015
                                                     HIGHEST RATED SPEED
Outside diameter
x Wall thickness
                                                     1st version
                   : 6.00x1.50x600
                                                     Control-lever
x Length mm
                                                      position degrees: 50...58
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                     Testing:
                                                     1st c-rod trav.mm : 8.40
                                                       Speed 1/min: 1130...1140
    per values ____
                                                     2nd c-rod trav.mm : 4.00
                                                       Speed 1/min: 1170...1200
START OF DELIVERY
                                                                  1/min : 1350
Test pressure, bar: 25...27
                                                     4th speed
M05
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```
: 0.30...1.40
  C-rod trav.mm
LOWEST RATED SPEED I
Control-lever
 position degrees: 24...32
Setting point w/out aux. spring
Speed 1/min: 300
Contr.-rod trav.mm: 7.8
Speed 1/min: 300
C-rod trav.mm: 7.80
SET IDLE AUXILIARY SPRING
Contr.-rod trav.mm: 2.00
TORQUE CONTROL
Torque-control curve - 1st version
1st speed 1/min: 1100
C-rod trav.mm: 9.50...9.60
2nd speed
            1/min : 600
  C-rod trav.mm : 10.40...10.60
             1/min : 750
3rd speed
  C-rod trav.mm : 10.20...10.40
4th speed 1/min: 950
  C-rod trav.mm : 9.60...9.80
FUEL-DELIVERY CHARACTERISTICS
Speed 1/min: 600
Del.quantity cm3/: 86.0...90.0
1000H: (83.0...93.0)
Dispersion cm3/: 6.00
              1000H.: (9.00)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 8.40
Speed
             1/min : 1130...1140
STARTING FUEL DELIVERY
Speed
              1/min : 100
Del.quantity cm3/: 130.0...150.0
              1000H.: (126.0...154.0)
Remarks:
```

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                       START OF DELIVERY
Note inst. in remarks column
                                                        Test pressure, bar: 25...27
                    : MB 11,4 02
                                                                            : 4.00...4.10
Test sheet
                                                       Prestroke mm
                    : 13.05.87
                                                                            : (3.95...4.15)
Edition
                                                       Contr.-rod trav.mm: 9.00...12.00
Superceeded
                                                       Cam sequence : 6-2-4-1-5-3
Calibrating oil
                    : ISO-4113
Combination no.
                    : 0 402 076 717
                                                       SD ang. spacing ^{0}CS: 0-60-120-180-240-300 Tolerance + - ^{0}: 0.50 (0.75)
Injection pump
Pump designation
                    : PES6P120A820LS
                      3095-10
                    : 0 412 026 715
EP type number
                                                       SD mark cyl. no. : 6
Governor
Governor design. : RSV350...750P1A487-4
                                                       BASIC SETTING
Governer no.
                    : 0 421 833 265
                                                       1st speed 1/mi: 730
Customer-spec. information
                                                       Contr.-rod trav.mm: 12.40...12.50
                    : DAIMLER-BENZ
Customer
                    : 0M407A
                                                       Del.quantity cm3/: 19.6...19.8
Engine
1st version kW : 169.0
                                                                      100H.: (19.3...20.1)
               1/min: 1500
Speed
                                                       Dispersion
                                                                      cm3/:0.5
TEST BENCH REQUIREMENTS
                                                                      100H.: (0.8)
Calibrating-oil inlet temp. °C
                                                       2nd speed 1/min: 350.0

Contr.-rod trav. m: 5.7...5.9

Del.quantity cm3/: 3.0...4.0

100H.: (-)

Dispersion cm3/: 0.8

100H.: (1.2)
                    : 38...42
Overflow valve
                    : 1 417 413 025
Inlet press., bar : 1.50
                                                       SLEEVE POSITION
Overflow
                                                       Control-lever position
 quantity min. 1/h: 100...120
                                                                     Degree: -3
                                                                      1/min: 700
Calibrating nozzle-holder
                                                       Speed
               : 1 688 901 019
                                                       Cont.-rod travelmm: 0.30...0.70
 assembly
                                                       FULL-LOAD DELIV. AT FULL-LOAD STOP
Opening
                    : 207...210
 pressure, bar
                                                       1st version
                                                                      1/min: 730
Perforated-plate
                                                       Speed
                                                       Del.quantity cm3/: 196.0...198.0
1000H.: (193.0...201.0)
Dispersion cm3/: 5.00
1000H.: (8.00)
 diameter mm
                    : 0.8
Test inj. tubing : 1 680 750 067
                                                       HIGHEST RATED SPEED
Outside diameter
x Wall thickness
                                                       1st version
                    : 6.00x1.50x1000
                                                       Control-lever
x Length mm
                                                        position degrees: 29...37
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                       Testing:
                                                       1st c-rod trav.mm : 11.40
                                                          Speed 1/min: 750...755
    per values
MO7
```

2nd c-rod trav.mm : 4.00 Speed 1/min : 785...795 4th speed 1/min: 900 C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Setting point w/out aux. spring Speed 1/min: 350 Contr.-rod trav.mm: 5.8 Speed 1/min: 350 C-rod trav.mm : 5.80

SET IDLE AUXILIARY SPRING Contr.-rod trav.mm: 2.00

ROTATIONAL-SPEED LIMITATION

1st version 1mm control-rod travel less than

full-load trav.mm: 11.40 Speed 1/min: 750...755 Speed

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/: 170.0...190.0 1000H.: (166.0...194.0)

Remarks: **APPLICATION** Generator

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BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                        (A) Injection pump setting values
                                                            Insp. values in parentheses
Set constant delivery quant.
Note inst. in remarks column
                                                            per values ____
Test sheet
                    : MB 11,4 Q 3
Edition
                    : 10.12.86
                                                       START OF DELIVERY
Superceeded
                                                       Test pressure, bar: 25...27
                   : ISO-4113
Calibrating oil
                                                       Prestroke mm
                                                                            : 4.00...4.10
                                                                            : (3.95...4.15)
Combination no.
                    : 0 402 076 721
                                                       Contr.-rod trav.mm: 9.00...12.00
                                                       Cam sequence : 6-2-4-1-5-
Injection pump
                                                                                                  3
                    : PES6P120A820LS3112
Pump designation
                      -11
EP type number
                    : 0 412 026 724
                                                       SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Governor
                    : RSV350...1100P0A485
Governor design.
Governer no.
                    : 0 421 833 240
                                                       SD mark cyl. no. : 6
Customer-spec. information
                                                       BASIC SETTING
Customer
                    : DAIMLER-BENZ
                                                       1st speed 1/mi: 1080
Engine
                    : 0M407A
                                                       Contr.-rod trav.mm: 9.90...10.00
1st version kW
                  : 165.0
              1/min: 2200
                                                       Del.guantity cm3/ : 14.1...14.3
Speed
TEST BENCH REQUIREMENTS
                                                                      100H.: (13.8...14.6)
Calibrating-oil inlet temp. °C
                                                                      cm3/:0.5
                                                       Dispersion
                    : 38...42
                                                                      100H.: (0.9)
Overflow valve
                                                       2nd speed 1/min: 350

Contr.-rod trav. m: 5.00...5.20

Del.quantity cm3/: 1.6...2.2

100H.: (1.3...2.5)

Dispersion cm3/: 0.8
                    : 1 417 413 025
Inlet press., bar: 1.50
Overflow
                                                                      100H.: (1.2)
 quantity min. 1/h: 100...120
                                                       SLEEVE POSITION
Calibrating nozzle-holder
 assembly
              : 1 688 901 019
                                                       Control-lever position
                                                       Degree: -3
Speed 1/min: 800
Cont.-rod travelmm: 0.30...0.70
Opening
 pressure, bar
                    : 207...210
                                                       Governor-spring reload
Perforated-plate
                    : 0,8
                                                       Notch setting x : 4.50
diameter mm
                                                       FULL-LOAD DELIV. AT FULL-LOAD STOP
                   : 1 680 750 067
Test inj. tubing
                                                       1st version
Outside diameter
                                                       Speed
                                                                      1/min: 1080
                                                       Del.guantity cm3/: 141.0...143.0
x Wall thickness
                                                                    1000H:: (138.0...146.0)
cm3/: 5.00
1000H:: (9.00)
                    : 6.00x1.50x1000
x Length mm
                                                       Dispersion
                                                       HIGHEST RATED SPEED
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1st version
Control-lever
 position degrees: 49...57
Testing:
1st c-rod trav.mm : 8.90
Speed 1/min: 1130...1140
2nd c-rod trav.mm: 4.00
            1/min : 1200...1230
  Speed
             1/min : 1350
4th speed
  C-rod trav.mm : 0.30...1.40
LOWEST RATED SPEED I
Control-lever
 position degrees: 26...34
Setting point w/out aux. spring
             1/min : 350
Speed
Contr.-rod trav.mm: 5.1
            1/min : 350
Speed
                   : 5.10
C-rod trav.mm
SET IDLE AUXILIARY SPRING
Contr.-rod trav.mm: 2.00
FUEL-DELIVERY CHARACTERISTICS
             1/min : 600
Speed
Del.quantity cm3/: 142.0...146.0
             1000H.: (139.0...149.0)
cm3/: 7.5
1000H.: (12.0)
Dispersion
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 8.90
            1/min : 1130...1140
Speed
STARTING FUEL DELIVERY
Speed
             1/min : 100
Del.quantity cm3/: 150.0...170.0
1000H.: (146.0...174.0)
Remarks:
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BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet : MWM 28,8 B Edition : 09.03.87 Superceeded Calibrating oil : ISO-4113 Combination no. : 0 402 618 800 Injection pump Pump designation : PE8P12OASOO/5RS7110 EP type number : 0 412 628 810 Customer-spec. information Customer : MWM : TBD234V16 Engine TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar : 1.50 Calibrating nozzle-holder assembly : 1 688 901 019 Opening pressure, bar : 207...210 Perforated-plate : 0,8 diameter mm Test inj. tubing : 1 680 750 067 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values START OF DELIVERY Test pressure, bar: 25...27

> : 5.20...5.30 : (5.15...5.35)

Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 2- 3- 4- 7- 8-

SD ang. spacing CS: 0-30-90-120-135-165-225-255 Tolerance + - 0: 0.50 (0.75) BASIC SETTING 1/mi: 800 1st speed Contr.-rod trav.mm: 14.90...15.00 Del.quantity cm3/: 26.0...26.2 100H.: (25.7...26.5) cm3/:0.5Dispersion 100H.: (0.9) 1/min: 300.0 2nd speed Contr.-rod trav. m: 6.5...6.7 Del.quantity cm3/: 3.0...4.0 100H.: (-) cm3/: 0.6 100H.: (1.0) Dispersion STARTING FUEL DELIVERY 1/min : 100 Del.quantity cm3/: 200.0...240.0 1000H.: (196.0...244.0) Remarks: Full-load delivery not known. Set according to engine test report. Pump runs in tandem **APPLICATION** Ship

Prestroke mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet : MWM 28,8 C : 02.06.87 Edition Superceeded Calibrating oil : ISO-4113 Combination no. : 0 402 618 801 Injection pump Pump designation : PE8P12OA5OO/5RS7144 : 0 412 628 821 EP type number Customer-spec. information Customer : MWM Engine : TBD234V16 TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar : 1.50 Calibrating nozzle-holder assembly : 1 688 901 019 Opening pressure, bar : 267...210 Perforated-plate : 0.8 diameter mm Test in j. tubing : 1 680 750 067 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values START OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 5.20...5.30 : (5,15,...5.35) Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 2- 3- 4- 7- 8-5- 6

SD ang. spacing CS: 0-30-90-120-135-165-225-255 Tolerance + - 0 : 0.50 (0.75) BASIC SETTING 1/mi: 800 1st speed Contr.-rod trav.mm: 14.90...15.00 Del.quantity cm3/: 26.0...26.2 100H.: (25.7...26.5) cm3/:0.5Dispersion 100H.: (0.9) 1/min: 300.0 2nd speed Contr.-rod trav. m: 6.5...6.7 Del.quantity cm3/: 3.0...4.0 100H.: (-) cm3/: 0.6 100H.: (1.0) Dispersion STARTING FUEL DELIVERY 1/min : 100 Del.quantity cm3/: 200.0...240.0 1000H.: (196.0...244.0) Remarks: Full-load delivery not known. Set according to engine test report. Pump runs in tandem APPLICATION Ship

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: 5.00...5.10
: (4.95...5.15)
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                     Prestroke mm
                                                     Contr.-rod trav.mm: 9.00...12.00
Note inst. in remarks column
                                                                        : 1- 5- 4- 8- 6- 3-
7- 2
                                                     Cam sequence
Test sheet
                   : STE 12,0 C
                   : 13.05.87
Superceeded
                   : 9.86
Calibrating oil : ISO-4113
                                                     SD ang. spacing CS: 0-45-90-135-180-225-
Combination no.
                   : 0 402 638 801
                                                                          270-315
                                                     Tolerance + - 0
                                                                        : 0.50 (0.75)
Injection pump
Pump designation : PESP120A920/6LS7127
                                                     SD mark cyl. no. : 1
EP type number
                  : 0 412 628 817
                                                     BASIC SETTING
Governor
Governor design. : RQ300/1100PA134-2
Governer no.
                  : 0 421 801 364
                                                     1st speed 1/mi: 1100
                                                     Contr.-rod trav.mm: 11.50...11.60
Customer-spec. information
Customer
                   : STEYR
                                                     Del.quantity cm3/: 17.6...17.8
                   : WD 815.66
Engine
                                                                   100H.: (17.3...18.1)
1st version kW : 277.0
             1/min: 2200
                                                     Dispersion
                                                                   cm3/:0.5
Speed
TEST BENCH REQUIREMENTS
                                                                   100H.: (0.9)
Calibrating-oil inlet temp. OC
                                                                   1/min: 300
                                                     2nd speed
                                                    Contr.-rod trav. m: 6.30...6.50
Del.quantity cm3/: 1.4...2.0
                   : 38...42
                                                                   100H.: (1.1...2.3)
cm3/: 0.8
Overflow valve
                   : 1 417 413 025
                                                    Dispersion
                                                                   100H.: (1.2)
Inlet press., bar: 1.50
                                                     SLEEVE POSITION
Calibrating nozzle-holder
                                                     Control-lever position
                : 1 688 901 019
                                                                 Degree: -1
 assembly
                                                                  17min: 600
                                                     Speed
                                                    Cont.-rod travelmm: 15.60...16.40
Opening
                   : 207...210
 pressure, bar
                                                    FULL-LOAD DELIV. AT FULL-LOAD STOP
Perforated-plate
 diameter mm
                   : 0,8
                                                     1st version
                                                     Speed
                                                                   1/min: 1100
                                                    Charge press. hPa: 1200
Del.quantity cm3/: 176.0...178.0
1000H:: (173.0...181.0)
Dispersion cm3/: 5.00
Test inj. tubing : 1 680 750 067
Outside diameter
                                                                 1000H.: (9.00)
x Wall thickness
                   : 6.00x1.50x1000
x Length mm
                                                    HIGHEST RATED SPEED
                                                    1st version
(A) Injection pump setting values
                                                    Control-lever
    Insp. values in parentheses
Set constant delivery quant.
                                                     position degrees: 31...39
    per values
                                                    Setting point:
START OF DELIVERY
                                                                1/min : 600
                                                    Speed
                                                    Contr.-rod trav.mm: 16.0
Test pressure, bar: 25...27
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Testing: 1st c-rod trav.mm : 10.50 Speed 1/min: 1145...1160 2nd c-rod trav.mm: 4.00 1/min : 1210...1240 Speed 4th speed 1/min: 1350 C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 9...17 Setting point w/out aux. spring 1/min : 300 Speed Contr.-rod trav.mm: 6.4 Testing: 1/min : 100 Speed C-rod trav.mm min : 7.80 Speed 1/min: 300 C-rod trav.mm : 6.40 C-rod trav, mm : 2.00 Speed 1/min : 400...440 TORQUE CONTROL Dimension a mm : 0.25 Torque-control curve - 1st version 1st speed 1/min : 1100 C-rod trav.mm : 11.50...11.60 2nd speed 1/min: 700 C-rod trav.mm : 12.00...12.10 3rd speed 1/min : 1000 C-rod trav.mm : 11.60...11.80 4th speed 1/min: 850 C-rod trav.mm : 11.80...12.10 compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 500 Speed Pressure hPa : 1200 Contr.-rod trav.mm: 12.00...12.10 Measurement 1/min : 500 Speed 1st pressure hPa : -: 9.50...9.60 C-rod trav.mm 2nd pressure hPa : 760 C-rod trav.mm : 11.50...11.60 3rd pressure hPa : 470 : 10,00,...10.20 C-rod trav.mm FUEL-DELIVERY CHARACTERISTICS 1st version Charge press. hPa : 1200

1/min : 700

Del.quantity cm3/: 183.0...191.0 1000H.: (181.0...193.0) Charge press. hPa : Speed 1/min: 500 Del.quantity cm3/: 122.0...126.0 1000H.: (120.0...128.0) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 10.50 1/min : 1145...1160 Speed STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/: 230.0...260.0 1000H.: (~) Contr.-rod trav.mm: 20.00...21.00 LOW IDLE Speed 1/min : 300 Contr.-rod trav.mm: 6.30...6.50 Del.quantity cm3/: 14.0...20.0 1000H.: (11.0...23.0) Dispersion cm3/: 8.00 1000H.: (12.00) Remarks: Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Speed

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BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                 START OF DELIVERY
                                                 Test pressure, bar: 25...27
Note inst. in remarks column
                                                                    : 4.00...4.10
                                                 Prestroke mm
Test sheet
                                                                    : (3.95...4.15)
                  : MB 21,9 V
                  : 09.03.87
Edition
                                                 Contr.-rod trav.mm: 9.00...12.00
Superceeded
                  : 9.86
                                                                   : 12-1-5-9-8-3-4-11-10
                                                 Cam sequence
Calibrating oil : ISO-4113
                                                                      -2-6-7
Combination no. : 0 402 640 802
                                                 SD ang. spacing CS: 0-45-60-105-120-165-
Injection pump
Pump designation : PE12P12OA32OLS7806
EP type number : 0 412 620 805
                                                                      180-225-240-285-300-
                                                 Tolerance + - 0
                                                                    : 0.50 (0.75)
Governor
Governor design. : RQV400...1050PA835
Governer no. : 0 421 813 581
                                                 SD mark cyl. no. : 12
                                                 BASIC SETTING
Customer-spec. information
Customer
                  : DAIMLER-BENZ
                                                 1st speed 1/mi: 600
                  : OM 444 A
Engine
                                                 Contr.-rod trav.mm: 12.60...12.80
1st version kW : 390.0
             1/min: 2100
                                                 Del.quantity cm3/: 17.8...18.1
Speed
TEST BENCH REQUIREMENTS
                                                              100H.: (17.5...18.4)
Calibrating-oil inlet temp. °C
                                                 Dispersion
                                                              cm3/:0.5
                  : 38...42
                                                              100H.: (0.9)
Overflow valve
                  : 1 417 413 025
                                                 2nd speed
                                                              1/min: 400
                                                 Contr.-rod trav. m: 5.40...5.60
                                                 Del.quantity cm3/: 1.6...2.2
Inlet press., bar: 1.50
                                                              100H.: (1.3...2.5)
cm3/: 0.8
100H.: (1.2)
Overflow
                                                 Dispersion
 quantity min. 1/h: 150...170
                                                 SLEEVE POSITION
Calibrating nozzle-holder
                 : 1 688 901 019
                                                 Control-lever position
 assembly
                                                             Degree: -1
                                                              17min: 1180
Opening
                                                 Speed
                                                 Cont.-rod travelmm: 15.20...17.80
                  : 207...210
 pressure, bar
                                                 FULL-LOAD DELIV. AT FULL-LOAD STOP
Perforated-plate
 diameter mm
                  : 0,8
                                                 1st version
                                                              1/min: 600
                                                 Speed
                                                 Test inj. tubing : 1 680 750 067
Outside diameter
x Wall thickness
                 : 6.00x1.50x1000
x Length mm
                                                 HIGHEST RATED SPEED
(A) Injection pump setting values
    Insp. values in parentheses
                                                 1st version
    Set constant delivery quant.
                                                 Control-lever
   per values
                                                  position degrees: 56...64
M15
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Testing: 1st c-rod trav.mm: 10.60 1/min: 1090...1100 Speed 2nd c-rod trav.mm : 4.00 1/min : 1195...1225 1/min : 1300 Speed 4th speed : 0.00...1.00 C-rod trav.mm LOWEST RATED SPEED I Control-lever position degrees: 8...16 Testing: 1/min : 100 Speed C-rod trav.mm min : 6.10 1/min : 400 Speed : 4.40...4.60 C-rod trav.mm CONSTANT REGULATION 1/min: 400...600 Speed TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1050 C-rod trav.mm : 11.60...11.80 2nd speed 1/min: 975 C-rod trav.mm : 11.90...12.10 compensator (LDA,ADA,ALDA) 1st version Setting 1/min : 600 Speed hPa : 660 Pressure Contr.-rod trav.mm: 12.60...12.80 Measurement 1/min: 600 Speed 1st pressure hPa : 300 : 10.30...10.50 C-rod trav.mm 2nd pressure hPa : 450 C-rod trav.mm : 11.70...11.90 3rd pressure hPa : 800 C-rod trav.mm : 12.70...12.90 4th pressure hPa : 1050 C-rod trav.mm : 13.20...13.40 SWITCH-OVER POINT 1/min : 270 (290) Speed FUEL-DELIVERY CHARACTERISTICS 1st version Charge press. hPa : 1100 1/min : 1050 Speed

Del.quantity cm3/: 167.0...170.0 1000H.: (164.0...173.0) cm3/: 8.00 1000H.: (12.00 Dispersion Charge press. hPa : 1100 Speed 1/min : 775 Del.quantity cm3/: 199.0...201.0 1000H.: (196.0...204.0) cm3/: 8.00 Dispersion 1000H.: 12.00 Charge press. hPa : -1/min : 500 Speed Del.quantity cm3/: 114.0...116.0 1000H.: (111.0...119.0) Dispersion cm3/: 8.00 1000H.: 12.00 ROTATIONAL-SPEED LIMITATION

1st version 1mm control-rod travel less than

full-load trav.mm: 10.60 Speed 1/min: 1090...1100

STARTING FUEL DELIVERY

Speed 1/min : 100 Del.quantity cm3/ : 175.0...195.0 1000H.: (171.0...199.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet Edition : MWM 21,6 A : 05.06.87 Superceeded Superceeded : 9.86 Calibrating oil : ISO-4113

Combination no. : 0 402 640 803

Injection pump

Pump designation : PE12P120A520/5RS7116

EP type number : 0 412 620 801

Governor

Governor design. : RQV300...1150PA756-1

Governer no. : 0 421 813 584

Customer-spec. information Customer : MWM

: TBD234V12 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. DC : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Perforated-plate

: 0.8 diameter mm

Test inj. tubing : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant.

per values

START OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1-2-9-10-5-6-11-12-3 Dispersion cm3/ : 5.00 1000H.: (9.00) -4-7-8 HIGHEST RATED SPEED 1st version SD ang. spacing CS: 0-30-60-90-120-150-Control-lever 180-210-240-270-300position degrees: 52...60 330 Tolerance + - 0 : 0.50 (0.75) Testing: 1st c-rod trav.mm : 13.90 BASIC SETTING Speed 1/min: 1190...1200 2nd c-rod trav.mm : 4.00 Speed 1/min: 1300...1330 4th speed 1/min: 1400 1st speed 1/mi: 800 Contr.-rod trav.mm: 14.90...15.00 C-rod trav.mm : 0.00...1.00 Del.quantity cm3/: 26.0...26.2 LOWEST RATED SPEED I Control-lever 100H.: (25.8...26.6) position degrees: 14...22 cm3/ : 0.5 Testing: Dispersion Speed 1/min : 100 100H.: (0.9) C-rod trav.mm min: 8.00 Speed 1/min: 300 2nd speed 1/min: 300 C-rod trav.mm : 6.50...6.70 Contr.-rod trav. m: 6.50...6.70 Del.quantity cm3/: 3.2...3.8 100H:: (2.9...4.1) Dispersion cm3/: 0.6 100H:: (1.0) CONSTANT REGULATION Speed 1/min: 300...580 compensator (LDA, ADA, ALDA) (B) Setting of injection pump with externally-mounted governor 1st version Setting SLEEVE TRAVELS 1/min : 500 Speed 1st speed 1/min: 300
Sleeve travel mm: 1.30...1.40
2nd speed 1/min: 350
Sleeve travel mm: 1.60...2.00 Pressure hPa : 900 Contr.-rod trav.mm: 14.90...15.00 Measurement 3rd speed 1/min: 560 1/min : 500 Speed Sleeve travel mm: 2.50...2.90 4th speed 1/min: 1190 1st pressure hPa C-rod trav.mm : 9.40...9.60 2nd pressure hPa : 625 Sleeve travel mm: 8.30...8.40 5th speed 1/min: 1280 Sleeve travel mm: 9.60...9.90 C-rod trav.mm : 14.70...14.80 3rd pressure hPa : 250 SLEEVE POSITION C-rod trav.mm : 11.40...11.60 Control-lever position SWITCH-OVER POINT Degree: -1 17min: 1200 Speed Cont.-rod travelmm: 15.20...17.80 Speed 1/min: 220 (240) FULL-LOAD DELIV. AT FULL-LOAD STOP FUEL-DELIVERY CHARACTERISTICS 1st version Speed 1/min: 800 1st version Charge press. hPa : 900 Charge press. hPa : 900 Del.quantity cm3/: 260.0...262.0 1000H.: (258.0...266.0) Speed 1/min: 1150 Del.quantity cm3/: 257.0...263.0 1000H.: (254.0...266.0) Charge press. hPa: -Speed 1/min: 500 Del.quantity cm3/: 128.0...132.0 1000H.: (126.0...134.0)

## ROTATIONAL-SPEED LIMITATION

1st version 1mm control-rod travel less than

full-load trav.mm: 13.90 Speed 1/min: 1190...1200

## STARTING FUEL DELIVERY

APPLICATION Installation 2300

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                      START OF DELIVERY
                                                      Test pressure, bar: 25...27
Note inst. in remarks column
                                                      Prestroke mm
                                                                          : 5.20...5.30
                                                                          : (5.15...5.35)
                    : MB 21,9 X
Test sheet
                    : 09.03.87
Edition
                                                      Contr.-rod trav.mm: 9.00...12.00
                                                                          : 12-1-5-9-8-3-4-11-10
Superceeded
                                                      Cam sequence
Calibrating oil : ISO-4113
                                                                            -2-6-7
                    : 0 402 640 804
Combination no.
                                                      SD ang. spacing CS: 0-45-60-105-120-165-
Injection pump
Pump designation : PE12P120A320LS7807
EP type number : 0 412 620 806
                                                                            180-225-240-285-300-
                                                                            345
                                                      Tolerance + - 0
                                                                          : 0.50 (0.75)
Governor
Governor design. : RQV350...1050PA842
Governer no.
                    : 0 421 813 587
                                                      SD mark cyl. no. : 12
                                                      BASIC SETTING
Customer-spec. information
                    : DAIMLER-BENZ
Customer
                                                      1st speed 1/mi: 600
                    : OM 444 A
Engine
                                                      Contr.-rod trav.mm: 13.50...13.70
                  : 390.0
1st version kW
              1/min: 2100
                                                      Del.quantity cm3/: 19.9...20.1
Speed
TEST BENCH REQUIREMENTS
                                                                    100H.: (19.6...20.4)
Calibrating-oil inlet temp. C
                                                      Dispersion
                                                                    cm3/:0.5
                    : 38...42
                                                                    100H.: (0.9)
Overflow valve
                    : 1 417 413 025
                                                      2nd speed
                                                                    1/min: 350
                                                      Contr.-rod trav. m: 5.40...5.60
Del.quantity cm3/: 1.6...2.2
100H.: (1.3...2.5)
Dispersion cm3/: 0.8
Inlet press., bar : 1.50
Overflow
                                                                    100H.: (1.2)
 quantity min. 1/h: 150...170
                                                      (B) Setting of injection pump with
Calibrating nozzle-holder
                  : 1 688 901 019
                                                          externally-mounted governor
 assembly
                                                      SLEEVE TRAVELS
Opening
                    : 207...210
 pressure, bar
                                                      1st speed 1/min: 350
                                                        Sleeve travel mm: 1.90...2.10
Perforated-plate
                                                      2nd speed 1/min: 700
                                                      Sleeve travel mm: 4.00...4.40
3rd speed 1/min: 1100
 diameter mm
                    : 0,8
                                                        Sleeve travel mm: 6.80...7.20
                                                      4th speed 1/min: 1200
Sleeve travel mm: 8.30...8.70
Test inj. tubing : 1 680 750 067
Outside diameter
x Wall thickness
                                                      SLEEVE POSITION
                                                      Control-lever position
                   : 6.00X1.50X1000
x Length mm
                                                                   Degree: -1
                                                                    1/min: 1150
(A) Injection pump setting values
                                                      Speed
    Insp. values in parentheses
Set constant delivery quant.
                                                      Cont.-rod travelmm: 15.20...17.80
    per values
                                                      FULL-LOAD DELIV. AT FULL-LOAD STOP
```

1st version C-rod trav.mm : 12.80...13.00 : 830 1/min: 600 3rd pressure hPa Speed Charge press. hPa: 660
Del.quantity cm3/: 199.0...201.0
1000H.: (196.0...204.0)
Dispersion cm3/: 5.00 : 13.70...13.80 C-rod trav.mm 4th pressure hPa : 1150 C-rod trav.mm : 13.70...13.90 1000K.: (9.00) SWITCH-OVER POINT HIGHEST RATED SPEED Speed 1/min : 270 (290) 1st version Control-lever FUEL-DELIVERY CHARACTERISTICS position degrees: 59...67 Testing: 1st version 1st c-rod trav.mm : 11.30 Charge press. hPa : 1100 1/min: 1090...1100 1/min : 1050 Speed Del.quantity cm3/: 170.0...174.0 2nd c-rod trav.mm : 4.00 1/min: 1155...1185 1000H.: (167.0...177.0) Speed 1/min : 1300 cm3/:8.04th speed Dispersion 1000H.: (12.0) C-rod trav.mm : 0.00...1.00 Charge press. hPa : 1100 Speed 1/min : 750 Del.quantity cm3/ : 204.0...208.0 1000H.: (201.0...211.0) LOWEST RATED SPEED I Control-lever position degrees: 10...18 cm3/:8.0Dispersion 1000H.: (12.0) Testing: Charge press. hPa : 1100 Speed 1/min : 100 C-rod trav.mm min: 7.10 1/min : 1050 Speed Del.quantity cm3/: 150.0...154.0 1000H.: (147.0...157.0) Dispersion cm3/: 8.0 1000H.: (12.0) 1/min : 350 Speed : 5.40...5.60 C-rod trav.mm CONSTANT REGULATION 1/min: 400...600 Charge press. hPa : -Speed 1/min : 500 Speed Del.quantity cm3/: 136.0...138.0 TORQUE CONTROL 1000H.: (133.0...141.0) cm3/: 8.0 1000H.: (12.0) Torque-control curve - 1st version 1/min : 1050 av.mm : 12.20...12.40 1st speed Dispersion C-rod trav.mm 1/min : 975 2nd speed ROTATIONAL-SPEED LIMITATION C-rod trav.mm : 12.60...12.80 1/min : 875 3rd speed C-rod trav.mm : 13.20...13.40 1st version 4th speed 1/min: 700 1mm control-rod travel less than C-rod trav.mm : 13.50...13.70 full-load trav.mm: 11.30 compensator (LDA,ADA,ALDA) 1/min : 1090...1100 Speed STARTING FUEL DELIVERY 1st version Setting Speed 1/min : 600 Speed 1/min : 100 Del.quantity cm3/: 220.0...240.0 1000H.: (216.0...244.0) Pressure hPa : 660 Contr.-rod trav.mm: 13.50...13.70 Remarks: Measurement 1/min : 600 Speed 1st pressure hPa : 350 C-rod trav.mm : 11.30...11.50 d pressure hPa : 500 2nd pressure hPa

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet Edition Superseeded : MB 21,9 X1 : 12.12.86

Calibrating oil : ISO-4113

: 0 402 640 805 Combination no.

Injection pump

Pump designation : PE12P120A320L\$7807

EP type number : 0 412 620 806

Governor

Governor design. : RQV350...1050PA842-1

Governer no. : 0 421 813 588

Customer-spec. information

: DAIMLER-BENZ Customer

: OM 444 LA Engine

1st version kW : 478.0 Speed 1/min: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Calibrating nozzle-holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Perforated-plate

diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values

START OF DELIVERY 1st version Test pressure, bar: 25...27 Speed 1/min: 030 Charge press. hPa: 800 Del.quantity cm3/: 217.0...219.0 1000H.: (214.0...222.0) Dispersion cm3/: 5.00 1000H.: (9.00) Speed 1/min: 650 : 5.20...5.30 Prestroke mm : (5.15...5.35) Contr.-rod trav.mm: 9.00...12.00 : 12-1-5-9-8-3-4-11-10 Cam sequence -2-6-7 HIGHEST RATED SPEED 1st version Control-lever SD ang. spacing CS: 0-45-60-105-120-165position degrees: 62...70 180-225-240-285-300-345 Testing: Tolerance + - 0 : 0.50 (0.75) 1st c-rod trav.mm : 14.00 1/min: 1090...1100 Speed 2nd c-rod trav.mm : 4.00 SD mark cyl. no. : 12 1/min : 1175...1205 Speed BASIC SETTING 4th speed 1/min : 1300 C-rod trav.mm : 0.00...1.00 1/mi: 650 1st speed LOWEST RATED SPEED I Contr.-rod trav.mm: 14.70...14.90 Control-lever position degrees: 11...19 Del.quantity cm3/: 21.7...21.9 Testing: 100H.: (21.4...22.2) Speed 1/min : 100 C-rod trav.mm min : 7.20 Dispersion cm3/:0.51/min : 350 Speed : 5.60...5.80 C-rod trav.mm 100H.: (0.9) CONSTANT REGULATION 2nd speed 1/min: 350 Speed 1/min : 400...600 Contr.-rod trav. m: 5.60...5.80 Del.quantity cm3/: 1.6...2.2 TORQUE CONTROL 100H.: (1.3...2.5) Torque-control curve - 1st version cm3/: 0.8 100H.: (1.2) 1st speed 1/min: 1050 Dispersion C-rod trav.mm : 15.00...15.20 2nd speed 1/min: 975 C-rod trav.mm: 15.30...15.50 3rd speed 1/min: 900 (B) Setting of injection pump with externally-mounted governor C-rod trav.mm : 15.70...15.90 SLEEVE TRAVELS 1st speed 1/min: 350 compensator (LDA,ADA,ALDA) Sleeve travel mm: 1.90...2.10 2nd speed 1/min: 700 Sleeve travel mm: 4.10...4.50
3rd speed 1/min: 1100
Sleeve travel mm: 7.60...8.00 1st version Setting 1/min : 600 Speed 4th speed 1/min: 1200 hPa : 800 Pressure Sleeve travel mm: 9.50...9.90 Contr.-rod trav.mm: 14.70...14.90 SLEEVE POSITION Measurement Control-lever position Speed 1/min : 600 Degree: -1 1/min: 1150 1st pressure hPa : 300 Speed C-rod trav.mm : 11.30...11.50 Cont.-rod travelmm: 15.20...17.80 2nd pressure hPa : 600 FULL-LOAD DELIV. AT FULL-LOAD STOP : 13.80...14.00 C-rod trav.mm 3rd pressure hPa : 950

```
: 14.90...15.00
  C-rod trav.mm
4th pressure hPa
                   : 1150
                   : 15.60...15.80
  C-rod trav.mm
SWITCH-OVER POINT
             1/min : 270 (290)
Speed
FUEL-DELIVERY CHARACTERISTICS
1st version
Charge press. hPa : 1300
Speed
             1/min : 1050
Del.quantity cm3/: 226.0...229.0
             1000H.: (223.0...232.0)
              cm3/:8.0
Dispersion
             1000H.: (12.0)
Charge press. hPa : 1300
             1/min : 850
Speed
Del.quantity cm3/: 244.0...248.0
1000H.: (241.0...251.0)
             cm3/: 8.0
1000H.: (12.0)
Dispersion
Charge press. hPa : 1300
             1/min : 1050
Speed
Del.quantity cm3/: 164.0...167.0
             1000H.: (161.0...170.0)
             cm3/: 8.0
1000H.: (12.0)
Dispersion
Charge press. hPa : -
             1/min : 500
Speed
Del.quantity cm3/: 133.0...135.0
             1000H.: (130.0...138.0)
              cm3/:8.0
Dispersion
             1000H.: (12.0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 14.00
            1/min: 1090...1100
Speed
STARTING FUEL DELIVERY
Speed
             1/min : 100
Del.quantity cm3/: 240.0...260.0
             1000H.: (236.0...264.0)
Remarks:
```

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet Edition Superceeded : MB 21,9 V1 : 24.8.87

Calibrating oil : ISO-4113

Combination no. : 0 402 640 806

Injection pump

Pump designation : PE12P12OA32OLS7806

EP type number : 0 412 620 805

Governor

Governor design. : RQV350...1000PA835-1 Governer no. : 0 421 813 590

Customer-spec. information

: DAIMLER-BENZ Customer

: OM 444 LA Engine

1st version kW : 419.0 Speed 1/min: 2000

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Overflow

quantity min. 1/h: 150...170

Calibrating nozzle-holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Perforated-plate

diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values

START OF DELIVERY 1st version Test pressure, bar: 25...27 1/min: 600 Speed Charge press, hPa: 650 Del.quantity cm3/: 187.0...189.0 Prestroke mm : 4.00...4.10 1000H.: (184.0...192.0) cm3/: 5.00 : (3.95...4.15) Contr.-rod trav.mm: 9.00...12.00 Dispersion : 12-1-5-9-8-3-4-11-10 1000H.: (9.00) Cam sequence -2-6-7 HIGHEST RATED SPEED 1st version Control-lever SD ang. spacing CS: 0-45-60-105-120-165position 'degrees: 115...123 180-225-240-285-300-Testing: Tolerance + - 0 : 0.50 (0.75) 1st c-rod trav.mm : 11.30 Speed 1/min: 1045...1060 Cnd c-rod trav.mm : 4 00 SD mark cyl. no. : 12 1/min : 10...1140 1/min : 300 Speed BASIC SETTING 4th speed C-rod trav.mm : 0.00...1.00 1st speed 1/mi: 600 LOWEST RATED SPEED I Contr.-rod trav.mm: 12.80...13.00 Control-lever position degrees: 64...72 Del.quantity cm3/: 18.7...18.9 Testing: 100H.: (18.4...19.2) 1/min : 100 Speed C-rod trav.mm min : 7.20 Speed 1/min : 350 Dispersion cm3/:0.5: 5.70...5.90 C-rod trav.mm 100H.: (0.9) CONSTANT REGULATION 2nd speed 1/min: 350 Speed 1/min : 400...600 Contr.-rod trav. m: 5.70...5.90
Del.quantity cm3/: 1.6...2.2
100H.: (1.3...2.5)
Dispersion cm3/: 0.8 compensator (LDA, ADA, ALDA) 100H.: (1.2) 1st version Setting (B) Setting of injection pump with 1/min : 600 Speed externally-mounted governor Pressure hPa : 650 Contr.-rod trav.mm: 12.80...13.00 SLEEVE TRAVELS 1st speed 1/min: 350
Sleeve travel mm: 1.90...2.10
2nd speed 1/min: 700 Measurement 1/min : 600 Speed Sleeve travel mm: 4.90...5.30 1st pressure hPa : 300 3rd speed 1/min: 1050 C-rod trav.mm : 11.00...11.20 Sleeve travel mm: 8.00...8.40 2nd pressure hPa : 420 4th speed 1/min: 1200 C-rod trav.mm : 12.10...12.30 Sleeve travel mm: 9.40...9.80 3rd pressure hPa : 800 C-rod trav.mm : 13.00...13.10 SLEEVE POSITION Control-lever position SWITCH-OVER POINT Degree: -1 1/min: 1180 1/min: 270 (290) Speed Speed Cont.-rod travelmm: 15.20...17.80 FUEL-DELIVERY CHARACTERISTICS FULL-LOAD DELIV. AT FULL-LOAD STOP

```
1st version
Charge press. hPa: 1150
Speed
             1/min : 1000
Del.quantity cm3/: 182.0...186.0
             1000H.: (179.0...189.0)
              cm3/:8.0
Dispersion
             1000H.: (12.0)
Charge press. hPa : 1150
             1/min: 900
Speed
Del.quantity cm3/: 196.0...200.0
1000H.: (193.0...203.0)
              cm3/:8.0
Dispersion
             1000H.: (12.0)
Charge press. hPa : -
Speed
             1/min : 500
Del.quantity cm3/: 125.0...129.0
             1000H.: (122.0...132.0)
             cm3/: 8.0
1000H.: (12.0)
Dispersion
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 11.30
Speed
             1/min : 1045...1060
STARTING FUEL DELIVERY
Speed
             1/min : 100
Del.quantity cm3/: 170.0...190.0
1000H.: (166.0...194.0)
```

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet Edition Superceeded : MB 21.9 V 2 : 09.03.87 Calibrating oil : ISO-4113 Combination no. : 0 402 640 807 Injection pump Pump designation : PE12P120A320LS7806 EP type number : 9 412 620 805 Governor Governor design. : RQV400...1065PA835-2 Governer no. : 0 421 813 603 Customer-spec, information Customer : DAIMLER-BENZ : OM 444 A Engine 1st version kW : 410.0 Speed 1/min: 2130 TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 150...170 Calibrating nozzle-holder assembly : 1 688 901 019 Opening pressure, bar : 207...210 Perforated-plate diameter mm : 0,8 Test inj. tubing : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values \_\_\_\_

1st version START OF DELIVERY 1/min: 600 Test pressure, bar: 25...27 Speed Charge press. hPa: 700
Del.quantity cm3/: 197.0...200.0
1000H.: (194.0...203.0)
Dispersion cm3/: 5.00 : 4.00...4.10 : (3.95...4.15) Prestroke mm Contr.-rod trav.mm: 9.00...12.00 : 12- 1- 5- 9- 8- 3 -4- 11- 10- 2- 6- 7 1000H.: (9.00) Cam sequence HIGHEST RATED SPEED 1st version Control-lever SD ang. spacing CS: 0-45-60-105-120-165position degrees: 57...65 180-225-240-285-300-345 Testing: Tolerance + - 0 1st c-rod trav.mm : 11.70 Speed 1/min : 1105...1115 : 0.50 (0.75) 2nd c-rod trav.mm: 4.00 SD mark cyl. no. : 12 1/min : 1210...1240 Speed 1/min : 1300 BASIC SETTING 4th speed C-rod trav.mm : 0.00...1.00 1/mi: 600 1st speed LOWEST RATED SPEED I Contr.-rod trav.mm: 13.70...13.90 Control-lever position degrees: 7...15 Del.quantity cm3/ : 19.7...20.0 Testing:  $1/\min : 100$ 100H.: (19.4...20.3) Speed C-rod trav.mm min: 6.10 Speed 1/min : 400 Dispersion cm3/:0.5: 4.40...4.60 C-rod trav.mm 100H.: (0.9) CONSTANT REGULATION 1/min: 400...600 2nd speed 1/min: 400.0 Speed Contr.-rod trav. m: 5.4...5.6 Del.quantity cm3/: 1.6...2.2 100H.: (1.3...2.5) Dispersion cm3/: 0.8 100H.: (1.2) TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min: 1065 C-rod thav.mm : 12.70...12.90 d speed 1/min : 975 2nd speed C-rod trav.mm : 13.30...13.50 (B) Setting of injection pump with 3rd speed 1/min : 900 externally-mounted governor C-rod trav.mm : 13,90...14.10 SLEEVE TRAVELS 4th speed 1/min: 800 1st speed 1/min: 350
Sleeve travel mm: 1.00...1.20
2nd speed 1/min: 500
Sleeve travel mm: 3.10...3.30 C-rod trav.mm : 14.30...14.50 compensator (LDA,ADA,ALDA) 3rd speed 1/min: 1100 Sleeve travel mm: 7.30...7.70 1st version 4th speed 1/min: 1225 Setting 1/min : 600 Sleeve travel mm: 8.30...8.70 Speed hPa : 700 Pressure Contr.-rod trav.mm: 13.70...13.90 SLEEVE POSITION Control-lever position Degree: -1 Measurement 1/min : 600 Speed 17min: 1180 Speed Cont.-rod travelmm: 15.20...17.80 1st pressure hPa : 350 C-rod trav.mm : 11.30...11.50 2nd pressure hPa : 500 FULL-LOAD DELIV. AT FULL-LOAD STOP NO1

```
: 12.60...12.80
  C-rod trav.mm
3rd pressure hPa
                   : 950
  C-rod trav.mm
                   : 14.10...14.20
4th pressure hPa : 1100
  C-rod trav.mm
                   : 14.20...14.40
SWITCH-OVER POINT
            1/min : 270 (290)
Speed
FUEL-DELIVERY CHARACTERISTICS
1st version
Charge press. hPa: 1100
            1/min: 1065
Speed
Del.quantity cm3/: 184.0...188.0
            1000H.: (181.0...191.0)
            cm3/: 8.00
1000H.: (12.0)
Dispersion
Charge press. hPa: 1100
            1/min : 800
Speed
Del.quantity cm3/: 212.0...216.0
            1000H.: (209.0...219.0)
             cm3/:8.00
Dispersion
            1000H.: (12.0)
Charge press. hPa : -
            1/min : 500
Speed
Del.quantity cm3/: 125.0...127.0
            1000H.: (122.0...130.0)
             cm3/:8.00
Dispersion
            1000H.: (12.0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 11.70
            1/min : 1105...1115
Speed
STARTING FUEL DELIVERY
            1/\min : 100
Speed
Del.quantity cm3/: 190.0...210.0
            1000H.: (186.0...214.0)
Remarks:
```

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 21.9 J Edition : 26.06.87 Superceeded : -

Calibrating oil : ISO-4113

Combination no. : 0 402 640 809

Injection pump

Pump designation : PE12P12OA32OL\$7813 EP type number : 0 412 620 809

Governor

Governor design. : RQV350...1050PA870

Governer no. : 0 421 813 640

Customer-spec. information

: DAIMLER-BENZ Customer

Engine : OM 444 LA

1st version kW : 552.0 Speed 1/min: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Over flow

quantity min. 1/h: 150...170

Calibrating nozzle-holder

assembly : 1 688 901 019

Opening |

pressure, bar : 207...210

Perforated-plate

diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values \_\_\_\_

START OF DELIVERY 1st version 1/min: 650 Test pressure, bar: 25...27 Speed Charge press. hPa: 850 Del.quantity cm3/: 224.0...226.0 1000H:: (221.0...229.0) Dispersion cm3/: 5.00 1000H:: (9.00) : 5.20...5.30 : (5.15...5.35) Prestroke mm Contr.-rod trav.mm: 19.00...21.00 Cam sequence : 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 HIGHEST RATED SPEED 1st version Control-lever SD ang. spacing CS: 0-45-60-105-120-165position degrees: 59...67 180-225-240-285-300-345 Testing: : 0.50 (0.75) Tolerance + - 0 1st c-rod trav.mm : 14.00 Speed 1/min : 1090...1100 2nd c-rod trav.mm: 4.00 SD mark cyl. no. : 12 1/min : 1190...1220 Speed 1/min : 1300 BASIC SETTING 4th speed C-rod trav.mm : 0.00...1.00 1/mi: 650 1st speed LOWEST RATED SPEED I Contr.-rod trav.mm: 14.30...14.50 Control-lever position degrees: 9...17 Del.quantity cm3/: 22.4...22.6 Testing: 100H.: (22.1...22.9) 1/min : 100 Speed C-rod trav.mm min: 7.70 Dispersion cm3/:0.5Speed 1/min : 350 C-rod trav.mm : 6.20...6.40 100H.: (0,9) CONSTANT REGULATION 1/min: 350...600 2nd speed 1/min: 350.0 Speed Contr.-rod trav. m: 6.2...6.6 Del.quantity cm3/: 1.6...2.2 100H:: (1.3...2.5) Dispersion cm3/: 0.8 100H:: (1.2) TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1050 C-rod trav.mm : 15.40...15.60 d speed 1/min : 1000 2nd speed C-rod trav.mm : 15.60...15.80 3rd speed 1/min : 950 (B) Setting of injection pump with externally-mounted governor C-rod trav.mm : 16.00...16.20 SLEEVE TRAVELS 1st speed 1/min: 350 compensator (LDA, ADA, ALDA) Sleeve travel mm: 1.90...2.10
2nd speed 1/min: 700
Sleeve travel mm: 4.10...4.50 1st version 1/min: 1100 3rd speed Setting Sleeve travel mm: 7.60...8.00 Speed 1/min : 600 4th speed 1/min: 1200 hPa : 850 Pressure Contr.-rod trav.mm: 14.30...14.50 Sleeve travel mm: 9.50...9.90 SLEEVE POSITION Measurement 1/min : 600 Control-lever position Speed Degree: -1 1/min: 1150 1st pressure hPa : 350 Speed C-rod trav.mm : 11.00...11.20 Cont.-rod travelmm: 15.20...17.80 2nd pressure hPa : 600 C-rod trav.mm : 13.40...13.60 FULL-LOAD DELIV. AT FULL-LOAD STOP 3rd pressure hPa : 1200

```
: 14.60...14.80
  C-rod trav.mm
4th pressure hPa : 1400
  C-rod trav.mm
                  : 15.20...15.40
SWITCH-OVER POINT
            1/min : 270 (290)
Speed
FUEL-DELIVERY CHARACTERISTICS
1st version
Charge press. hPa : 1700
Speed
            1/min : 1050
Del.quantity cm3/: 256.0...259.0
            1000H.: (253.0...262.0)
             cm3/:8.00
Dispersion
            1000H.: (12.00
Charge press. hPa : 1700
            1/min: 900
Speed
Del.quantity cm3/: 270.0...274.0
            1000H.: (267.0...277.0)
             cm3/:8.00
Dispersion
            1000H.: (12.0)
Charge press. hPa : 1700
            1/min : 1050
Speed
Del.quantity cm3/: 185.0...188.0*
            1000H.: (182.0...191.0)
             cm3/:8.00
Dispersion
            1000H.: 12.00
Charge press. hPa :
            1/min : 500
Speed
Del.quantity cm3/: 139.0...141.0
            1000H.: (136.0...144.0)
             cm3/:8.00
Dispersion
            1000H.: (12.0)
ROTATIONAL-SPEED LIMITATION
1st version
1mm control-rod travel less than
 full-load trav.mm: 14.00
Speed
            1/min : 1090...1100
STARTING FUEL DELIVERY
            1/min : 100
Speed
Del.quantity cm3/: 260.0...280.0
            1000H.: (256.0...284.0)
Remarks:

★ = Set at reduced-delivery stop.
```

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                       : 1-5-3-6-2-4
                                                    Cam sequence
Note inst. in remarks column
                                                    SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)
                   : SCA 11.0U14
: 19.03.87
Test sheet
Edition
Superceeded
Calibrating oil : ISO-4113
                                                    SD mark cyl. no. : 1
Combination no.
                   : 0 402 646 809
                                                    BASIC SETTING
Injection pump
                                                                   1/mi: 700
                                                    1st speed
Pump designation : PE6P120A720R$7001
                                                    Contr.-rod trav.mm: 13.20...13.30
EP type number
                   : 0 412 626 800
Governor
Governor design.
                   : RQ200/1000PA616
                                                    Del.quantity cm3/: 19.9...20.1
                   : 0 421 801 158
Governer no.
                                                                  100H.: (19.6...20.4)
Customer-spec. information
                                                                  cm3/:0.6
Customer
                   : SCANIA
                                                    Dispersion
                   : DS11 15
                                                                  100H.: (0.9)
Engine
TEST BENCH REQUIREMENTS
                                                                  1/min: 225.0
                                                    2nd speed
                                                    Contr.-rod trav. m: 4.4...4.6
                                                    Del.quantity cm3/: 1.3...1.7
Calibrating-oil inlet temp. °C
                                                                  100H.: (-)
                   : 38...42
                                                                  cm3/:0.3
                                                    Dispersion
                                                                  100H.: (0.6)
Overflow valve
                   : 1 417 413 025
                                                    SLEEVE POSITION
                                                    Control-lever position
Inlet press., bar : 1.50
                                                                 Degree: -1
                                                                  17min: 600
                                                    Speed
Calibrating nozzle-holder
                  : 1 688 901 019
                                                    Cont.-rod travelmm: 15.60...16.40
 assembly
                                                    FULL-LOAD DELIV. AT FULL-LOAD STOP
Opening
                   : 207...210
 pressure, bar
                                                    1st version
Perforated-plate
                                                                  1/min: 700
                                                    Speed
 diameter mm
                   : 0.8
                                                    Charge press. hPa : 900
                                                    Del.quantity cm3/: 199.0...201.0
1000H.: (196.0...204.0)
                                                    Dispersion cm3/ : 6.00
Test inj. tubing
                  : 1 680 750 015
                                                                 1000H.: (9.00)
Outside diameter
                                                    HIGHEST RATED SPEED
x Wall thickness
                                                    1st version
x Length mm
                  : 6.00X1.50X600
                                                    Control-lever
                                                     position degrees: 35...43
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                    Setting point:
    per values
                                                    Speed
                                                              1/min : 600
                                                    Contr.-rod trav.mm: 16.0
START OF DELIVERY
Test pressure, bar: 25...27
                                                    Testing:
                                                    1st c-rod trav.mm : 12.20
                   : 5.00...5.10
                                                      Speed
                                                                1/min : 1045...1060
Prestroke mm
                                                    2nd c-rod trav.mm : 4.00
                   : (4.95...5.15)
Contr.-rod trav.mm: 9.00...12.00
                                                                1/min : 1115...1145
                                                      Speed
N06
```

4th speed 1/min: 1200 1/min : 100 C-rod trav.mm : 0.00...1.00 Speed Del.quantity cm3/: 240.0...290.0 1000H.: (-) Contr.-rod trav.mm: 20.00...21.00 LOWEST RATED SPEED I Control-lever position degrees: 5...13 Setting point w/out aux. spring LOW IDLE 1/min : 225 Contr.-rod trav.mm: 4.5 Speed 1/min : 225 Contr.-rod trav.mm: 4.40...4.60 Del.quantity cm3/: 13.0...17.0 1000H.: (-) Dispersion cm3/: 3.00 1000H.: (6.00) Testing: Speed 1/min : 100 C-rod trav.mm min : 5.90 Speed 1/min : 225 C-rod trav.mm C-rod trav.mm : 2.00 Remarks: 1/min: 300...340 Delivery-valve spring pre-tension Speed 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm compensator (LDA, ADA, ALDA) Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm. 1st version Setting 1/min : 500 Speed hPa : 900 Pressure Contr.-rod trav.mm: 13.20...13.30 ADDITIONAL INFORMATION Measurement 1/min : 500 Speed 1st pressure hPa : 11.60...11.70 C-rod trav.mm Check and set without ROBO diaphragam 2nd pressure hPa : 420 C-rod trav.mm : 12.80...12.90 : 290 3rd pressure hPa C-rod trav.mm : 11.90...12.10 For comb. with letter modex see VDT-I-400/116. FUEL-DELIVERY CHARACTERISTICS 1st version Charge press. hPa : 900 1/min : 1000 For sealing see VDT-I-400/117. Speed Del.quantity cm3/: 193.0...201.0 1000H.: (191.0...203.0) Charge press. hPa : -1/min : 500 Speed Del.quantity cm3/: 160.0...164.0 Scania test specifications taken over on Aug. 18, 1983 1000H.: (158.0...166.0) Start of delivery on engine. ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than Engine model DS 11 - 170 before top dead center. full-load trav.mm: 12.20 1/min: 1045...1060 Speed STARTING FUEL DELIVERY

NO7

Firing sequence of engine: 1-5-3-6-2-4. NO8

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                       Cam sequence
                                                                           : 1-5-3-6-2-4
Note inst. in remarks column
Test sheet
                                                       SD ang. spacing ^{\circ}CS: 0-60-120-180-240-300 Tolerance + - ^{\circ}: 0,50 (0,75)
                    : SCA 11.0 WZ
: 24.8.87
Edition
Superceeded
                    : 10.85
Calibrating oil
                  : ISO-4113
                                                       SD mark cyl. no. : 1
                    : 0 402 646 812 Y
                                                       START OF DELIVERY DIFFERENCE
Combination no.
                                                       betw.c-rod trav.mm: 7,00...14,70 & c-rod trav max. : 21,00 Difference CS : 1,85...2,55
Injection pump
Pump designation : PE6P120A72CRS7007Y
EP type number
                    : 0 412 626 803
Governor
Governor design. : RQV200...1000PA539-2
                                                       BASIC SETTING
Governer no.
                   : 0 421 813 359
                                                                       1/mi: 700
                                                       1st speed
Customer-spec, information
                                                       Contr.-rod trav.mm: 16,00...16,10
Customer
                    : SAAB-SCANIA
Engine
                    : DSC 11 0
                                                       Del.quantity cm3/: 22,5...22,7
TEST BENCH REQUIREMENTS
                                                                      100H.: (22,2...23,0)
Calibrating-oil inlet temp. C
                                                       Dispersion
                                                                      cm3/:0.7
                    : 38...42
                                                                      100H.: (1,0)
Overflow valve
                     : 1 417 413 025
                                                       2nd speed
                                                                      1/min: 225
                                                       Contr.-rod trav. m: 4,40...4,60
                                                       Dei.quantity cm3/ : 1,4...1,8
Inlet press., bar : 1.50
                                                                      100H.: (-)
                                                                      cm3/:0,3
Calibrating nozzle-holder
                                                       Dispersion
                                                                      100H.: (0,6)
 assembly
                 : 1 688 901 019
                                                        (B) Setting of injection pump with
Opening
                    : 207...210
                                                            externally-mounted governor
 pressure, bar
Perforated-plate
                                                       SLEEVE TRAVELS
                                                       1st speed 1/min: 225
                    : 0,8
 diameter mm
                                                         Sleeve travel mm: 1,30...1,40
                                                       2nd speed 1/min: 340
                                                         Sleeve travel mm: 2,30...2,70 d speed 1/min: 550 Sleeve travel mm: 3,90...4,20 th speed 1/min: 1045 Sleeve travel mm: 8,10...8,30
Test inj. tubing : 1 680 750 015
                                                       3rd speed
Outside diameter
x Wall thickness
                                                       4th speed
                   : 6,00x1,50x600
x Length mm
                                                       5th speed 1/min: 1170
                                                         Sleeve travel mm: 9,70...10,00
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                       SLEEVE POSITION
                                                       Control-lever position
    per values
                                                                     Degree: -1
                                                                      17min: 1070
START OF DELIVERY
                                                       Speed
Test pressure, bar: 25...27
                                                       Cont.-rod travelmm: 15,20...17,80
                                                       FULL-LOAD DELIV. AT FULL-LOAD STOP
                      4,50...4,60
Prestroke mm
                    : (4,45...4,65)
Contr.-rod trav.mm: 6,00...8,00
                                                       1st version
N09
```

Speed 1/min: 700 1/min : 500 Speed Del.quantity cm3/: 164.0...168.0 1000H.: (162.0...170.0) Charge press. hPa : 900 Del.quantity cm3/: 225,0...227,0 1000H.: (222,0...230,0) Dispersion cm3/: 7,0 ROTATIONAL-SPEED LIMITATION 1000H.: (10.0) 1st version HIGHEST RATED SPEED imm control-rod travel less than 1st version Control-lever full-load trav.mm: 15,00 1/min : 1040...1050 position degrees: 58...66 Speed Testing: STARTING FUEL DELIVERY 1st c-rod trav.mm : 15,00 Speed 1/min : 1040...1050 2nd c-rod trav.mm : 4,00 1/min : 100 1/min : 1175...1205 Del.quantity cm3/: 240,0...290,0 Speed 4th speed 1/min: 1300 1000H.: (-) C-rod trav.mm : 0,00...1,00 Contr.-rod trav.mm: 20,00...21,00 LOWEST RATED SPEED I LOW IDLE Control-lever Speed 1/min: 225 Contr.-rod trav.mm: 4,40...4,60 position degrees: 5...13 Testing: Del.quantity cm3/: 14,0...18,0 1000H.: (-) 1/min : 100 Speed cm3/:3.0C-rod trav.mm min : 5,90 Dispersion 1/min : 225 1000H.: (6.0) Speed : 4,40...4,60 C-rod trav.mm C-rod trav.mm mm : 2,00 1/min : 310...370 Remarks: Delivery-valve spring pre-tension 3.2...3.4 mm. Speed Permissible alteration of 3.0...3.5 mm compensator (LDA,ADA,ALDA) Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm. 1st version Setting 1/min : 500 Speed ; 900 hPa Pressure Contr.-rod trav.mm: 16,00...16,10 ADDITIONAL INFORMATION Measurement Speed 1/min : 500 1st pressure hPa : -C-rod trav.mm : 11,80...11,90 Check and set without ROBO diaphragam 2nd pressure hPa : 410 C-rod trav.mm : 14,00...14,10 : 290 3rd pressure hPa C-rod trav.mm : 12,40...12,60 For comb. with letter index see FUEL-DELIVERY CHARACTERISTICS VDT-I-400/116. 1st version Charge press. hPa : 900 Speed 1/min: 1000 Del.quantity cm3/: 216.0...224.0 1000H.: (214.0...226.0) For sealing see VDT-I-400/117. Charge press. hPa : -N10

APE.

Firing sequence of engine: 1-5-3-6-2-4.

Start of delivery - engine: 22° before TDC at control-rod travel = 6.0... 8.0 mm Test specifications approved by Scania on 1984-12-19

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                        : 1-5- 3-6-2-4
                                                     Cam Requence
Note inst. in remarks column
                                                     SD ang. Spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
                   : SCA 11.0 V3
: 24.8.87
Test sheet
Edition
Superceeded
                   : 8.85
                   : ISO-4113
Calibrating oil
                                                     SD mark cyl, no. : 1
                   : 0 402 646 814
                                                     BASIC SETTING
Combination no.
                                                                   1/mi: 850
Injection pump
                                                     1st speed
Pump designation : PE6P120A720RS7004
                                                     Contr.-rod trav.mm: 10.60...10.70
EP type number
                  : 0 412 626 801
Governor
Governor design. : R9900PA528-2
Governer no. : 0 421 801 20
                                                     Del.quantity cm3. : 16.2...16.4
                   : 0 421 801 204
                                                                   100H. (15.9...16.7)
Customer-spec. information
Customer
                   : SAAB-SCANIA
                                                     Dispersion
                                                                  cm3/:0.5
Engine
                   : DN 11 40
                                                                   100H.: (0.8)
                                                     SLEEVE POSITION
TEST BENCH REQUIREMENTS
                                                     Control-lever position
Calibrating-oil inlet temp. DC
                                                                 Degree: 45...47
                                                                   17min: 600
                   : 38...42
                                                     Cont.-rod travelmm: 15.20...17.80
Overflow valve
                                                     FULL-LOAD DELIV. AT FULL-LOAD STOP
                   : 1 417 413 025
Inlet press., bar : 1.50
                                                     1st version
                                                     Speed
                                                                   1/min: 850
                                                     Del.quantity cm3/: 162.0...164.0
Calibrating nozzle-holder
                                                                 1000H.: (159.0...167.0)
cm3/: 5.00
1000H.: (8.00)
                 : 1 688 901 019
 assembly
                                                    Dispersion
Opening
                   : 207...210
 pressure, bar
                                                    HIGHEST RATED SPEED
Perforated-plate
                                                     1st version
 diameter mm
                   : 0.8
                                                     Control-lever
                                                     position degrees: 16...24
Test inj. tubing : 1 680 750 015
                                                    Setting point:
                                                                1/min : 600
                                                     Speed
                                                     Contr.-rod trav.mm: 16,5
Outside diameter
x Wall thickness
                  : 6,00X1,50X600
                                                     Testing:
x Length mm
                                                     1st c-rod trav.mm: 9.60
                                                                 1/min: 900...905
(A) Injection pump setting values
                                                       Speed
    Insp. values in parentheses
Set constant delivery quant.
                                                     2nd c-rod tray.mm : 4.00
                                                                 ./min: 934...948
                                                      Speed
                                                                 1/min : 1900
    per values
                                                     4th speed
                                                                        : 0.00...1.00
                                                      C-rod trav.mm
START OF DELIVERY
                                                    ROTATIONAL-SPEED LIMITATION
Test pressure, bar: 25...27
Prestroke mm
                   : 5.00...5.10
                                                    1st version
                   : (4.95...5.15)
Contr.-rod trav.mm: 9.00...12.00
```

```
1mm control-rod travel less than
 full-load trav.mm: 9.60
      1/min: 900...905
Speed
STARTING FUEL DELIVERY
HIGH IDLE
Contr.-rod trav.mm: 4.90...5.10
Dispersion cm3/: 4.00
1000H.: (7.00)
ADDITIONAL INFORMATION
 emarks:
Check and set without ROBO diaphragam
For comb. With letter index see
VDT-I-400/116.
For sealing see VDT-I-400/117.
Test specifications approved by Scania
on 1984-09-19
Engine start of delivery: 18° BTDC
Firing sequence of engine: 1-5-3-6-2-4.
APPLICATION
Generator set
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BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                       : 1-5-3-6-2-4
                                                    Cam sequence
Note inst. in remarks column
                                                    SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Test sheet
                   : SCA 11,0 V4
Edition
                   : 24.8.87
Superceeded
                   : 8.85
Calibrating oil
                   : ISO-4113
                                                    SD mark cyl. no. : 1
Combination no.
                   : 0 402 646 815
                                                    BASIC SETTING
Injection pump
                                                                   1/mi: 700
                                                    1st speed
Pump designation : PE6P120A720RS7004
EP type number
                   : 0 412 626 801
                                                    Contr.-rod trav.mm: 10.60...10.70
Governor
Governor design. : RQ750PA528-1
                                                    Del.quantity cm3/: 15.5...15.7
Governer no.
                   : 0 421 801 203
                                                                  100H.: (15.2...16.0)
Customer-spec. information
                                                                  cm3/:0.5
Customer
                   : SAAB-SCANIA
                                                    Dispersion
                   : DN 11 40
                                                                  100H.: (0.8)
Engine
TEST BENCH REQUIREMENTS
                                                    SLEEVE POSITION
                                                    Control-lever position
Calibrating-oil inlet temp. °C
                                                                 Degree: 45...47
                                                                  17min: 600
                   : 38...42
                                                    Cont.-rod travelmm: 15,20...17,80
Overflow valve
                   : 1 417 413 025
                                                    FULL-LOAD DELIV. AT FULL-LOAD STOP
                                                    1st version
Inlet press., bar : 1.50
                                                                  1/min: 700
                                                    Speed
                                                    Del.quantity cm3/; 155.0...157.0
1000H.: (152.0...160.0)
Dispersion cm3/: 5.00
Calibrating nozzle-holder
 assembly : 1 688 901 019
                                                                 1000H.: (8.00)
Opening
                   : 207...210
 pressure, bar
                                                    HIGHEST RATED SPEED
Perforated-plate
                                                    1st version
                                                    Control-lever
 diameter mm
                   : 0.8
                                                     position degrees: 21...29
Test inj. tubing : 1 680 750 015
                                                    Setting point:
                                                    Speed
                                                                1/min : 600
Outside diameter
                                                    Contr.-rod trav.mm: 16,5
x Wall thickness
                  : 6.00x1.50x600
x Length mm
                                                    Testing:
                                                    1st c-rod trav.mm : 9.60
Speed 1/min : 750...755
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                    2nd c-rod trav.mm: 4.00
                                                                1/min: 773...786
                                                      Speed
                                                                 1/min : 850
    per values
                                                    4th speed
                                                                       : 0.00...1.00
                                                      C-rod trav.mm
START OF DELIVERY
                                                    ROTATIONAL-SPEED LIMITATION
Test pressure, bar: 25...27
                   : 5.00...5.10
                                                    1st version
Prestroke mm
                   : (4.95...5.15)
Contr.-rod trav.mm: 9.00...12.00
                                                         4
N14
```

1mm control-rod travel less than full-load trav.mm: 9.60 peed 1/min: 750...755 Speed STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/: 240.0...290.0 1000H.: (-) Contr.-rod trav.mm: 20.00...21.00 HIGH IDLE Contr.-rod trav.mm: 4.90...5.10 cm3/: 4.00 1000H.: (7.00) Dispersion ADDITIONAL INFORMATION emarks: Check and set without ROBO diaphragam For comb. with letter index see VDT-I-400/116. For sealing see VDT-I-400/117. Test specifications approved by Scania on 1984-09-19 Engine start of delivery: 18° BTDC Firing sequence of engine: 1-5-3-6-2-4.

APPLICATION Generator set

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                              : 1-5-3-6-2-4
                                                         Cam sequence
Note inst. in remarks column
Test sheet
                                                         $D ang. spacing ^{\circ} CS: 0-60-120-180-240-300 Tolerance + - ^{\circ} : 0.50 (0.75)
                     : SCA 11,0 J1
                     : 13.05.87
Edition
Superceeded
Calibrating oil : ISO-4113
                                                         SD mark cyl. no. : 1
Combination no.
                    : 0 402 646 821
                                                         START OF DELIVERY DIFFERENCE
Injection pump
                                                         betw.c-rod trav.mm: 7.00...14.70
Pump designation : PE6P12OA72ORS7104
EP type number : 0 412 626 807
                                                         & c-rod tray max. : 21.00
Difference CS : 1.85...2.55
Governor
Governor design. : RQV200...1000PA725
Governer no. : 0 421 813 457
                                                         BASIC SETTING
                                                                       1/mi: 700
                                                         1st speed
Customer-spec. information
                                                         Contr.-rod trav.mm: 14.70...14.80
Customer
                    : SAAB-SCANIA
                     : DSC 11 01
                                                         Del.quantity cm3/: 21.0...21.2
Engine
                                                                        100H.: (20.7...21.5)
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                                                         Dispersion
                                                                        cm3/:0.7
                     : 38...42
                                                                        100H.: (1.0)
Overflow valve
                     : 1 417 413 025
                                                                        1/min: 225.0
                                                         2nd speed
                                                         Contr.-rod trav. m: 4.4...4.6
Del.quantity cm3/: 1.4...1.8
100H.: (-)
Inlet press., bar : 1.50
                                                                        cm3/: 0.3
100H:: (0.6)
Calibrating nozzle-holder
                                                         Dispersion
                  : 1 688 901 019
 assembly
Opening
                                                         (B) Setting of injection pump with
                                                             externally-mounted governor
                    : 207...210
 pressure, bar
                                                         SLEEVE TRAVELS
Perforated-plate
                                                         1st speed 1/min: 225
Sleeve travel mm: 1.20...1.40
 diameter mm
                     : 0.8
                                                         2nd speed
                                                                      1/min: 270
                                                           Sleeve travel mm: 1.80...2.10 d speed 1/min: 340
Test inj. tubing : 1 680 750 015
                                                         3rd speed
                                                           Sleeve travel mm: 2.40...2.80
Outside diameter
                                                         4th speed 1/min: 1040
Sleeve travel mm: 8.40...8.60
5th speed 1/min: 1170
x Wall thickness
x Length mm
                 : 6.00x1.50x600
(A) Injection pump setting values
                                                           Sleeve travel mm: 10.10...10.40
    Insp. values in parentheses
Set constant delivery quant.
                                                         SLEEVE POSITION
    per values
                                                         Control-lever position
                                                                      Degree: -1
                                                                       17min: 1050
START OF DELIVERY
                                                         Speed
                                                         Cont.-rod travelmm: 15.20...17.80
Test pressure, bar: 25...27
                                                         FULL-LOAD DELIV. AT FULL-LOAD STOP
                     : 4.50...4.60
Prestroke mm
                     : (4.45...4.65)
Contr.-rod trav.mm: 6.00...8.00
                                                        1st version
N16
```

```
Speed
               1/min: 700
                                                        Del.quantity cm3/: 164.0...168.0
Charge press. hPa: 900
                                                                      1000H.: (162.0...170.0)
Del.quantity cm3/: 210.0...212.0
              1000H.: (207.0...215.0)
cm3/ : 7.00
                                                        ROTATIONAL-SPEED LIMITATION
Dispersion
              1000H.: (10.00)
                                                        1st version
                                                        1mm control-rod travel less than
HIGHEST RATED SPEED
1st version
                                                         full-load trav.mm: 13.70
                                                                     1/min: 1040...1050
Control-lever
                                                        Speed
 position degrees: 59...67
                                                        STARTING FUEL DELIVERY
Testing:
1st c-rod trav.mm : 13.70
Speed 1/min : 1040...1050
2nd c-rod trav.mm : 4.00
                                                        1/min : 1150...1180
1/min : 1300
  Speed
                                                        Contr.-rod trav.mm: 20.00...21.00
4th speed
                     : 0.00...1.00
  C-rod trav.mm
                                                        LOW IDLE
LOWEST RATED SPEED I
Control-lever
                                                                      1/min : 225
                                                        Speed
                                                        Contr.-rod trav.mm: 4.40...4.60
Del.quantity cm3/: 14.0...18.0
1000H.: (-)
Dispersion cm3/: 3.00
 position degrees: 5...13
Testing:
              1/min : 100
Speed
                                                                      1000H.: (6.00)
C-rod tray.mm min : 5.90
             1/min : 225
Speed
C-rod trav.mm : 4.40...4.60
C-rod trav.mm : 2.00
                                                        Remarks:
                                                        Delivery-valve spring pre-tension 3.2...3.4 mm.
             1/min : 310...370
Speed
                                                        Permissible alteration of 3.0...3.5 mm
                                                        Because of flattening, set the spring
 compensator (LDA, ADA, ALDA)
                                                        preload on new delivery-valve holders
                                                        to 2.9...3.1 mm.
1st version
Setting
              1/min : 500
Speed
             hPa : 900
Pressure
Contr.-rod trav.mm: 14.70...14.80
                                                        ADDITIONAL INFORMATION
Measurement
             1/min : 500
Speed
1st pressure hPa
                                                        Check and set without ROBO diaphragam
C-rod trav.mm : 11.8
2nd pressure hPa : 410
                    : 11.80...11.90
C-rod trav.mm : 14.00...14.10
3rd pressure hPa : 290
                     : 12.40...12.60
                                                        For comb. with letter index see
  C-rod trav.mm
                                                        VDT-I-400/116.
FUEL-DELIVERY CHARACTERISTICS
1st version
Charge press. hPa: 900
                                                        For sealing see VDT-I-400/117.
             1/min : 1000
Del.quantity cm3/: 205.0...213.0
1000H.: (203.0...215.0)
Speed 1/min: 500
Speed
```

Scania test specifications taken over on May 17, 1984 22° before top dead center with control-rod travel 6.0...8.0 mm.

Firing sequence of engine: 1-5-3-6-2-4.

```
: 1-5- 3- 6- 2- 4
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                       Cam sequence
Note inst. in remarks column
Test sheet
                                                       SD ang. spacing ^{\circ}CS: 0-60-120-180-240-300 Tolerance + - ^{\circ} : 0.50 (0.75)
                    : SCA 9,0 B
                    : 09.03.87
Edition
Superceeded
                    : 10.85
                   : ISO-4113
Calibrating oil
                                                       SD mark cyl. no. : 1
                    : 0 402 646 822
Combination no.
                                                       BASIC SETTING
Injection pump
                                                                      1/mi: 700
                                                       1st speed
                    : PE6P120A320RS7102
Pump designation
EP type number
                    : 0 412 626 804
                                                       Contr.-rod trav.mm: 12.00...12.10
Governor
Governor design. : RQ200/1000PA745
                                                       Del.quantity cm3/: 16.3...16.5
Governer no.
                    : 0 421 801 283
                                                                     100H.: (16.0...16.8)
Customer-spec. information
Customer
                    : SCANIA
                                                       Dispersion
                                                                     cm3/:0.6
Engine
                    : DS9 03
                                                                     100H.: (0.9)
TEST BENCH REQUIREMENTS
                                                                     1/min: 225
                                                      2nd speed
                                                      Contr.-rod trav. m: 5.00...5.20
Del.quantity cm3/: 1.5...1.9
100H.: (1.2...2.2)
Dispersion cm3/: 0.3
100H.: (0.6)
Calibrating-oil inlet temp. °C
                    : 38...42
Overflow valve
                    : 1 417 413 025
                                                      SLEEVE POSITION
Inlet press., bar : 1.50
                                                      Control-lever position
                                                                    Degree: 45...47
Calibrating nozzle-holder
                                                      Speed
                                                                     17min: 600
 assembly
              : 1 688 901 019
                                                      Cont.-rod travelmm: 15.20...17.80
                                                      FULL-LOAD DELIV. AT FULL-LOAD STOP
Opening
                    : 207...210
 pressure, bar
                                                      1st version
Perforated-plate
                                                      Speed
                                                                     1/min: 700
                                                      Charge press. hPa : 900
Del.quantity cm3/ : 163.0...165.0
 diameter mm
                    : 0.8
                                                                    1000H.: (160.9...168.0)
                                                                    cm3/ : 6.00
1000H.: (9.00)
Test inj. tubing : 1 680 750 015
                                                      Dispersion
Outside diameter
x Wall thickness
                                                      HIGHEST RATED SPEED
                    : 6.00x1.50x600
                                                      1st version
x Length mm
                                                      Control-lever
                                                       position degrees: 36...44
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                      Setting point:
    per values
                                                      Speed
                                                                 1/min : 600
                                                      Contr.-rod trav.mm: 16.5
START OF DELIVERY
Test pressure, bar: 25...27
                                                      Testing:
                                                      1st c-rod trav.mm: 11.00
Prestroke mm
                    : 5.00...5.10
                                                                 1/min: 1345...1060
                                                      2nd c-rod trav.mm : 4.00
                    : (4.95...5.15)
Contr.-rod trav.mm: 9.00...12.00
                                                         Speed
                                                                  1/min: 1180...1210
N19
```

4th speed 1/min: 1300 C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 6...14 Setting point w/out aux. spring 1/min : 225 Contr.-rod trav.mm: 4.9 Testing: 1/min : 100 Speed C-rod trav.mm min : 6.30 Speed 1/min : 225 C-rod trav.mm : 4.90 C-rod tray.mm : 2.00 1/min: 310...350 Speed compensator (LDA,ADA,ALDA) 1st version Setting -1/min : 500 Speed hPa : 900 Pressure Contr.-rod trav.mm: 12.00...12.10 Measurement 1/min : 500 Speed 1st pressure hPa : -C-rod trav.mm : 11.30...11.40 2nd pressure hPa : 420 : 11.70...11.80 C-rod trav.mm 3rd pressure hPa : 380 C-rod trav.mm : 11.50...11.70 FUEL-DELIVERY CHARACTERISTICS 1st version Charge press. hPa : 900 1/min : 1000 Speed Del.quantity cm3/: 162.0...170.0 1000H.: (160.0...172.0) Speed 1/min: 500 Del.quantity cm3/: 141.0...145.0 1000H.: (139.0...147.0) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 11.00 1/min: 1045...1060

LOW IDLE 1/min : 225 Speed Contr.-rod trav.mm: 4.80...5.00 Remarks: Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm. ADDITIONAL INFORMATION Check and set without ROBO diaphragam For comb. with letter index see VDT-I-400/116. For sealing see VDT-I-400/117. Test specifications approved by Scania on 1986-10-02 Start of delivery - engine: 150 before Firing sequence of engine: 1-5-3-6-2-4.

Speed

```
: 1-5- 3- 6- 2- 4
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                      Cam sequence
Note inst. in remarks column
                                                      SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - 0.50 (0.75)
                    : SCA 9,0 H
Test sheet
                    : 09.03.87
Edition
Superceeded
                    : ISO-4113
Calibrating oil
                                                      SD mark cyl. no. : 1
Combination no.
                    : 0 402 646 824
                                                      BASIC SETTING
                                                                     1/mi: 700
Injection pump
                                                      1st speed
Pump designation
                   : PE6P120A320RS7111
EP type number
                   : 0 412 626 809
                                                      Contr.-rod trav.mm: 12.30...12.40
Governor
Governor design. : RQ750PA758
                                                      Del.quantity cm3/: 17.7...17.9
Governer no.
                    : 0 421 801 297
                                                                    100H.: (17.4...18.2)
Customer-spec. information
Customer
                    : SAAB-SCANIA
                                                      Dispersion
                                                                    cm3/:0.6
                    : DS 9 46,47
                                                                    100H.: (0.9)
Engine
TEST BENCH REQUIREMENTS
                                                      SLEEVE POSITION
                                                      Control-lever position
Calibrating-oil inlet temp. C
                                                                   Degree: 45...47
                    : 38...42
                                                                    17min: 600
                                                      Cont.-rod travelmm: 15.20...17.80
Overflow valve
                    : 1 417 413 025
                                                     FULL-LOAD DELIV. AT FULL-LOAD STOP
Inlet press., bar : 1.50
                                                     1st version
                                                                    1/min: 700
                                                      Speed
                                                     Del.quantity cm3/: 177.0...179.0
1000H.: (174.0...182.0)
Dispersion cm3/: 6.00
1000H.: (9.00)
Calibrating nozzle-holder
                : 1 688 901 019
 assembly
Opening
 pressure, bar
                    : 207...210
                                                     HIGHEST RATED SPEED
Perforated-plate
                                                      1st version
 diameter mm
                    : 0.8
                                                     Control-lever
                                                      position degrees: 18...26
                   : 1 680 750 015
Test inj. tubing
                                                     Setting point:
                                                     Speed
                                                              1/min : 600
Outside diameter
                                                     Contr.-rod trav.mm: 16,5
x Wall thickness
                   : 6.00x1.50x600
                                                     Testing:
x Length mm
                                                     1st c-rod trav.mm : 11.30
                                                                1/min : 750...755
(A) Injection pump setting values
                                                        Speed
                                                     2nd c-rod trav.mm : 4.00
Speed 1/min : 784...797
4th speed 1/min : 850
    Insp. values in parentheses
Set constant delivery quant.
    per values
                                                        C-rod trav.mm
                                                                         : 0.00...1.00
START OF DELIVERY
                                                     ROTATIONAL-SPEED LIMITATION
Test pressure, bar: 25...27
                    : 5.00...5.10
                                                     1st version
Prestroke mm
                    : (4.95...5.15)
Contr.-rod tray.mm: 9.00...12.00
```

1mm control-rod travel less than full-load trav.mm: 11.30 1/min : 750...755 Speed STARTING FUEL DELIVERY HIGH IDLE Contr.-rod trav.mm: 5.80...6.00 Dispersion cm3/: 4.00 1000H.: (7.00) ADDITIONAL INFORMATION emarks: Check and set without ROBO diaphragam For comb. with letter index see VDT-I-400/116. For sealing see VDT-I-400/117. Test specifications approved by Scania 1987-01-08 Start of delivery - engine: 15° before Firing sequence of engine: 1-5-3-6-2-4. **APPLICATION** Generator

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                         : 1-5- 3- 6- 2- 4
                                                     Cam sequence
Note inst. in remarks column
Test sheet
                    : SCA 9.0 H1 : 09.03.87
                                                     SD ang. spacing ^{0}CS: 0-60-120-180-240-300 Tolerance + - ^{0}: 0.50 (0.75)
Edition
Superceeded
Calibrating oil : ISO-4113
                                                      SD mark cyl. no. : 1
Combination no.
                    : 0 402 646 825
                                                     BASIC SETTING
Injection pump
                                                      1st speed
                                                                     1/mi: 850
Pump designation : PE6P12OA32ORS7111
                                                     Contr.-rod trav.mm: 12.30...12.40
EP type number
                   : 0 412 626 809
Governor
                                                     Del.quantity cm3/: 17.9...18.1
Governor design. : RQ900PA758-1
Governer no.
                   : 0 421 801 298
                                                                    100H.: (17.6...18.4)
Customer-spec. information
                   : SAAB-SCANIA
Customer
                                                     Dispersion
                                                                    cm3/:0.6
                    : DS 9 46,47
                                                                    100H.: (0.9)
Engine
TEST BENCH REQUIREMENTS
                                                     SLEEVE POSITION
                                                     Control-lever position
Calibrating-oil inlet temp. OC
                                                                  Degree: 45...47
                    : 38...42
                                                                    1/min: 600
                                                     Cont.-rod travelmm: 15.20...17.80
Overflow valve
                                                     FULL-LOAD DELIV. AT FULL-LOAD STOP
                    : 1 417 413 025
Inlet press., bar : 1.50
                                                     1st version
                                                     Speed
                                                                    1/min: 850
                                                     Del.quantity cm3/: 179.0...181.0
Calibrating nozzle-holder
                                                                  1000H.: (176.0...184.0)
cm3/ : 6.00
1000H.: (9.00)
                : 1 688 901 019
 assembly
                                                     Dispersion
Opening
                    : 207...210
 pressure, bar
                                                     HIGHEST RATED SPEED
Perforated-plate
                                                     1st version
 diameter mm
                    : 0.8
                                                     Control-lever
                                                      position degrees: 19...27
Test inj. tubing
                   : 1 680 750 015
                                                     Setting point:
                                                     Speed
                                                               1/min : 600
                                                     Contr.-rod trav.mm: 16.5
Outside diameter
x Wall thickness
                   : 6.00x1.50x600
                                                     Testing:
x Length mm
                                                     1st c-rod trav.mm : 11.30
                                                                 1/min : 900...905
(A) Injection pump setting values
                                                        Speed
    Insp. values in parentheses
Set constant delivery quant.
                                                     2nd c-rod trav.mm : 4.00
Speed 1/min : 941...955
4th speed 1/min : 1000
    per values ____
                                                                         : 0.00...1.00
                                                       C-rod trav.mm
START OF DELIVERY
Test pressure, bar: 25...27
                                                     ROTATIONAL-SPEED LIMITATION
                    : 5.00...5.10
                                                     1st version
Prestroke mm
                    : (4.95...5.15)
Contr.-rod trav.mm: 9.00...12.00
```

1mm control-rod travel less than full-load trav.mm: 11.30 1/min: 900...905 Speed STARTING FUEL DELIVERY Speed 1/min : 100 Del.quantity cm3/: 240.0...290.0 1000H:: (-) Contr.-rod trav.mm: 20.00...21.00 HIGH IDLE Contr.-rod trav.mm: 5.70...5.90 cm3/: 4.00 1000H.: (7.00) Dispersion ADDITIONAL INFORMATION emarks: Check and set without ROBO diaphragam For comb. With letter index see VDT-I-400/116. For sealing see VDT-I-400/117. Test specifications approved by Scania 1987-01-08 Start of delivery - engine: 150 before TDC Firing sequence of engine: 1-5-3-6-2-4. APPLICATION Generator

```
: 4.40...4.50
: (4.35...4.55)
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                     Prestroke mm
Note inst. in remarks column
                                                     Contr.-rod trav.mm: 9.00...12.00
                                                     Cam sequence : 1-5-3-6-2-4
Test sheet
                   : GUS 18,0 D1
                   : 09.03.87
Edition
Superceeded
                                                     SD ang. spacing ^{\circ} CS: 0-60-120-180-240-300 Tolerance + - ^{\circ} : 0.50 (0.75)
Calibrating oil : ISO-4113
                   : 0 402 646 826
Combination no.
                                                     SD mark cyl. no. : 1
Injection pump
Pump designation : PE6P130A720RS7112
                                                     BASIC SETTING
EP type number
                   : 0 412 636 802
Governor
                                                     1st speed
                                                                  1/mi: 900
Governor design. : RQV350...900PA760-1
Governer no.
                   : 0 421 813 617
                                                     Contr.-rod trav.mm: 13.30...13.40
Customer-spec. information
                                                     Del.quantity cm3/: 29.9...30.2
Customer
                   : GUASCOR
                                                                   100H.: (29.5...30.5)
                   : F180T/TA
Engine
                                                                   cm3/:0.6
                                                     Dispersion
1st version kW : 340.0
             1/min: 1800
Speed
                                                                   100H.: (1.0)
                                                    2nd speed 1/min: 350.0
Contr.-rod trav. m: 5.2...5.4
Del.quantity cm3/: 2.4...3.0
100H.: (2.0...3.4)
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                   : 38...42
                                                                   cm3/:1.0
                                                     Dispersion
                                                                   100H.: (1.4)
Overflow valve
                   : 1 417 413 025
                                                     (B) Setting of injection pump with
                                                         externally-mounted governor
Inlet press., bar : 1.50
                                                     SLEEVE TRAVELS
Calibrating nozzle-holder
                                                     1st speed 1/min: 350
                : 1 688 901 019
 assembly
                                                       Sleeve travel mm: 1.50...1.80
                                                                 1/min: 700
                                                     2nd speed
Opening
                   : 207...210
                                                       Sleeve travel mm: 5.30.,.5.70
 pressure, bar
                                                     3rd speed 1/min: 900
                                                       Sleeve travel mm: 7.70...7.90
Perforated-plate
 diameter mm
                   : 0.8
                                                     SLEEVE POSITION
                                                     Control-lever position
                                                                 Degree: -1
Test inj. tubing : 1 680 750 067
                                                                  17min: 950
Outside diameter
                                                    Cont.-rod travelmm: 15.20...17.80
x Wall thickness
                                                    FULL-LOAD DELIV. AT FULL-LOAD STOP
                   : 6.00x1.50x1000
x Length mm
(A) Injection pump setting values
                                                    1st version
    Insp. values in parentheses
                                                                   1/min: 900
                                                    Speed
    Set constant delivery quant.
                                                    Del.quantity cm3/: 299.0...302.0
                                                    1000H.: (295.5...305.5)
Dispersion cm3/ : 6.00
1000H.: (10.00)
    per values
START OF DELIVERY
Test pressure, bar: 25...27
                                                    HIGHEST RATED SPEED
N25
```

1st version Control-lever position degrees: 57...65 Testing: 1st c-rod trav.mm : 12.30 1/min: 940...950 Speed 2nd c-rod trav.mm : 4.00 Speed 1/min: 1020...1050 th speed 1/min: 1150 C-rod trav.mm: 0.00...1.00 4th speed LOWEST RATED SPEED I Control-lever position degrees: 8...16 Testing: Speed 1/min : 100 C-rod trav.mm min : 6.80 Speed 1/min : 350 C-rod trav.mm : 5.20...5.40 CONSTANT REGULATION 1/min : 415...535 Speed ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 12.30 1/min: 940...950 Speed LOW IDLE 

Remarks:

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                         : 1-5-3-6-2-4
                                                      Cam sequence
Note inst. in remarks column
                                                      SD ang. spacing ^{0}CS: 0-60-120-180-240-300 Tolerance + - ^{0}: 0.50 (0.75)
Test sheet
                    : SCA 11,0U16
Edition
                    : 09.03.87
Superceeded
Calibrating oil : ISO-4113
                                                      SD mark cyl. no. : 1
Combination no.
                    : 0 402 646 827
                                                      EMSIC SETTING
Injection pump
                                                      1st speed
                                                                     1/mi: 700
Pump designation : PE6P120A720RS7001
EP type number : 0 412 626 800
                                                      Contr.-rod trav.mm: 11.70...11.80
Governor
Governor design. : RQ200/1000PA713-1
                                                      Del.quantity cm3/: 16.1...16.3
Governer no.
                    : 0 421 801 324
                                                                    100H.: (15.8...16.6)
Customer-spec. information
Customer
                   : SCANIA
                                                      Dispersion
                                                                    cm3/:0.5
Engine
                    : DS11 29
                                                                    100H.: (0.8)
TEST BENCH REQUIREMENTS
                                                      2nd speed
                                                                    1/min: 225.0
                                                      Contr.-rod trav. m: 4.9...5.1
                                                      Del.quantity cm3/: 1.3...1.7
Calibrating-oil inlet temp. °C
                    : 38...42
                                                                    100H.: (-)
                                                                    cm3/:0.3
                                                      Dispersion
                                                                    100H.: (0.6)
Overflow valve
                    : 1 417 413 025
                                                      SLEEVE POSITION
                                                      Control-lever position
Inlet press., bar : 1.50
                                                                   Degree: 101...103
                                                                    17min: 600
                                                      Speed
Calibrating nozzle-holder
                                                      Cont.-rod travelmm: 15.20...17.80
                 : 1 688 901 019
 assembly
                                                      FULL-LGAD DELIV. AT FULL-LOAD STOP
Opening
                    : 207...210
 pressure, bar
                                                      1st version
Perforated-plate
                                                                    1/min: 700
                                                      Speed
                                                      Charge press. hPa : 900
 diameter mm
                    : 0.8
                                                     Del.quantity cm3/: 161.0...163.0
1000H:: (158.0...166.0)
Dispersion cm3/: 5.00
Test inj. tubing : 1 680 750 015
                                                                   1000H.: (8.00)
Outside diameter
x Wall thickness
                                                     HIGHEST RATED SPEED
x Length mm
                 : 6.00x1.50x600
                                                      1st version
                                                      Control-lever
                                                      position degrees: 35...43
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                      Setting point:
    per values
                                                      Speed
                                                                  1/min : 600
                                                      Contr.-rod trav.mm: 16.5
START OF DELIVERY
                                                      Testing:
Test pressure, bar: 25...27
                                                      1st c-rod trav.mm : 10.70
                                                     Speed 1/min: 1045...1060
2nd c-rod trav.mm: 4.00
                    : 5.00...5.10
frestroke mm
                    : (4.95...5.15)
Contr.-rod trav.mm: 9.00...12.00
                                                                  1/min : 1175...1205
                                                       Speed
N27
```

4th speed 1/min: 1300 C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 5...13 Setting point w/out aux. spring 1/min : 225 Contr.-rod trav.mm: 4.5 Testing: Speed 1/min: 100 C-rod trav.mm min: 5.90 Speed 1/min: 225 C-rod trav.mm : 4.50 C-rod trav.mm : 2.00 1/min: 300...340 Speed compensator (LDA,ADA,ALDA) 1st version Setting 1/min : 500 Speed hPa : 900 Pressure Contr.-red trav.mm: 11.70...11.80 Measurement Speed 1/min : 500 1st pressure hPa : -: 10.40...10.50 C-rod trav.mm 2nd pressure hPa : 220 C-rod trav.mm : 11.40...11.50 3rd pressure hPa : 165 C-rod trav.mm : 10.50...10.70 FUEL-DELIVERY CHARACTERISTICS 1st yersion Charge press. hPa : 900 1/min : 1000 Del.quantity cm3/: 160.0...168.0 1000H.: (158.0...170.0) 1/min : 500 Speed Del.quantity cm3/: 120.0...124.0 1000H.: (118.0...126.0) ROTATIONAL-SPEED LIMITATION 1st version 1mm control-rod travel less than full-load trav.mm: 10.70 1/min: 1045...1060 Speed STARTING FUEL DELIVERY

Contr.-rod trav.mm: 20.00...21.00 LOW IDLE 1/min : 225 Speed Contr.-rod trav.mm: 4.40...4.60 Remarks: Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm. ADDITIONAL INFORMATION Check and set without ROBO diaphragam For comb. with letter index see VDT-I-400/116. For sealing see VDT-I-400/117. Test specifications approved by Scania on 1986-06-04 Start of delivery - engine: 15° before Firing sequence of engine: 1-5-3-6-2-4.

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